

2009  
CONSTRUCTION STANDARDS  
AND  
DETAILS



CITY OF CONCORD  
NEW HAMPSHIRE

COMMUNITY DEVELOPMENT DEPARTMENT  
ENGINEERING SERVICES DIVISION  
CITY OF CONCORD, NEW HAMPSHIRE

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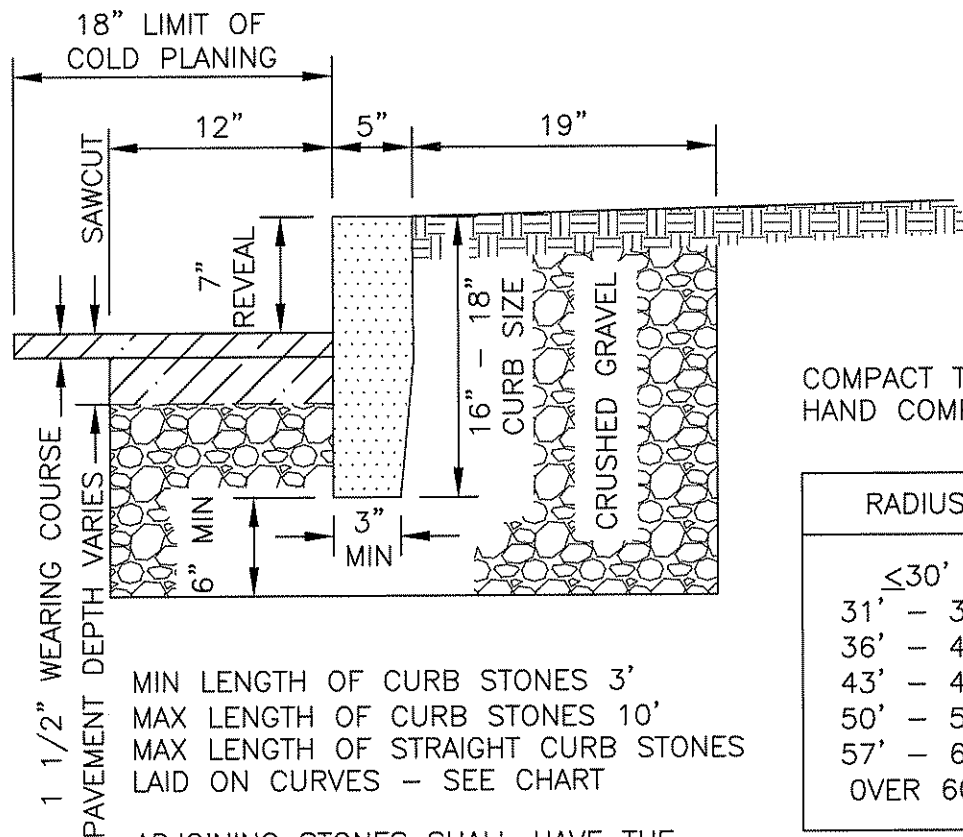
CONSTRUCTION STANDARDS

THESE ARE TYPICAL ENGINEERING DRAWINGS  
AND ARE NOT INTENDED FOR A SPECIFIC  
APPLICATION. THE CITY MAKES NO  
REPRESENTATION OR GUARANTEE OF THEIR  
SUITABILITY FOR USE. USERS OTHER THAN  
THE CITY, DO SO AT THEIR OWN RISK.

## **City of Concord Construction Standards and Details**

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C-2	Sloped Granite Curb
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CR-5	Sidewalk Ramp Type 3
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SD-7	Double Frame and Grate Catch Basin
SD-8	Oil / Sediment Control Barrier
SD-9	Standard Headwall
SD-10	Drywell
SM-1	Sanitary Sewer & Storm Drain Pipe Installation
SM-2	Sewer Manhole
SM-3	Sanitary Brick Shelf Construction
SM-4	Adjusting Frames to Grade
SM-5	Sewer Main Inside Drop Manhole
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W-3	Hydrant Painting and Marker Flags
W-4	Single Family Meter Installation
W-5	Residential Meter Installation with Irrigation
W-6	Meter Installation with Irrigation and Fire Suppression
W-7	New Condominium Dual Residential Meter Installation
W-8	Condo Conversion Dual Residential Meter Installation
W-9	Installation of Water Meters
W-10	Water Service through Foundation
W-11	Air Release Valve (for testing purposes only)



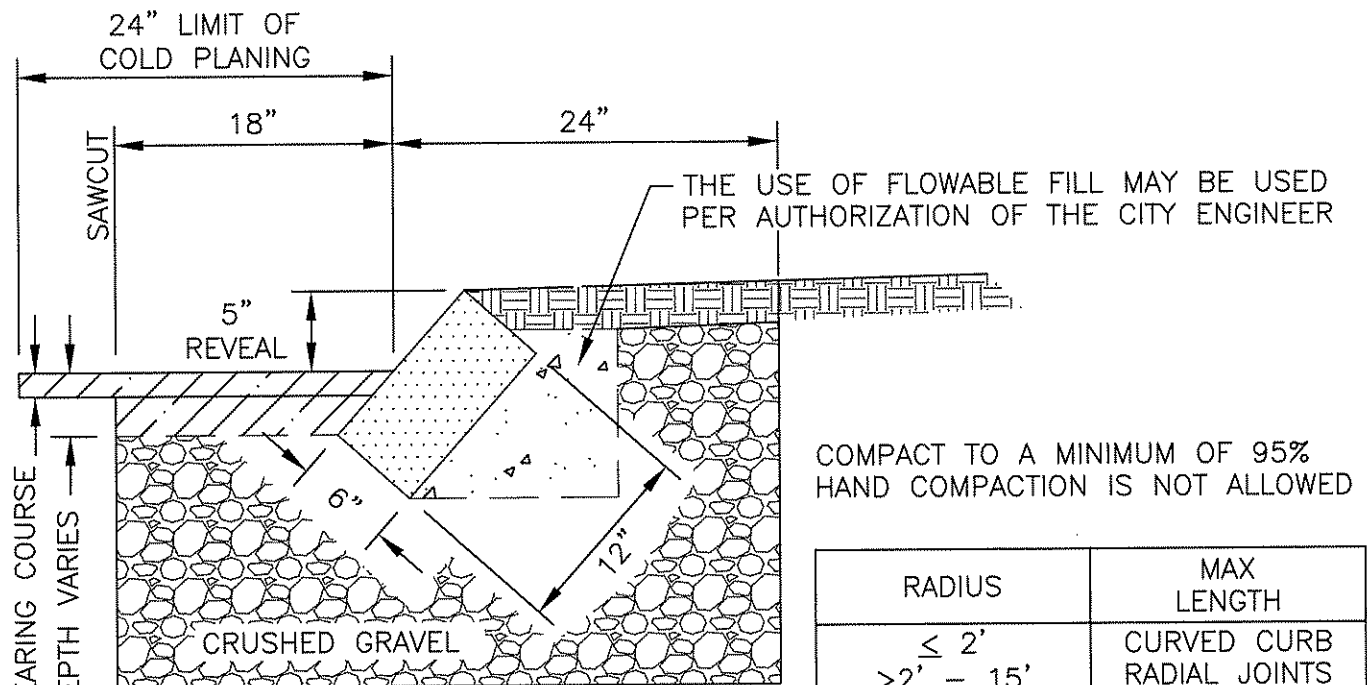
COMPACT TO A MINIMUM OF 95%  
HAND COMPACTION IS NOT ALLOWED

RADIUS	MAX LENGTH
$\leq 30'$	CURVED CURB
31' - 35'	5'
36' - 42'	6'
43' - 49'	7'
50' - 56'	8'
57' - 60'	9'
OVER 60'	10'

#### FINISH SURFACE AND TOLERANCES FOR VERTICAL GRANITE CURB

AREA	FINISH SURFACE	TOLERANCE
<u>TOP</u>	5" WIDE OR AS OTHERWISE SHOWN, SAWN TRUE PLANE.	$+\frac{1}{8}"$ TO $+\frac{1}{8}"$
	FRONT AND BACK ARRIS LINES PITCHED STRAIGHT AND PARALLEL.	$+\frac{1}{8}"$ TO $+\frac{1}{8}"$
<u>FRONT FACE</u>	RIGHT ANGLE TO TOP, APPROXIMATELY TRUE PLANE. NO DRILL HOLES SHOWING IN TOP 10"	$+1"$ TO $-\frac{1}{2}"$
<u>BACK FACE</u> EXPOSED	PLANE PARALLEL WITH FRONT FACE. STRAIGHT SPLIT TO $1\frac{1}{2}"$ BELOW EXPOSED SURFACE. NO LARGER THAN $\frac{1}{4}"$ SEGMENT OF DRILL HOLES SHOWING IN ARRIS LINES.	$+1"$ TO $-1"$
CONCEALED	BELOW $1\frac{1}{2}"$ FROM EXPOSED SURFACE.	$+1\frac{1}{2}"$ TO $-1\frac{1}{2}"$
BOTTOM	APPROXIMATELY PARALLEL TO TOP. MINIMUM WIDTH: 3"	SEE PLANS
<u>ENDS</u> EXPOSED PORTION	SQUARE WITH PLANES OF TOP AND FACE	
<u>JOINTS</u> EXPOSED	OPTIMUM WIDTH: 1"	
CONCEALED	TO BREAK BACK NO MORE THAN 4"	$+\frac{3}{4}"$ TO $-\frac{3}{4}"$

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	VERTICAL GRANITE CURB	DRAWING NO. C-1
-	-	-		DATE: 12/08
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MIN LENGTH OF STRAIGHT CURB STONES 18"  
 MAX LENGTH OF STRAIGHT CURB STONES 8'  
 MAX LENGTH OF STRAIGHT CURB STONES LAID  
 ON CURVES - SEE CHART

ADJOINING STONES SHALL HAVE THE SAME OR  
 APPROXIMATE LENGTH.

RADIUS	MAX LENGTH
$\leq 2'$	CURVED CURB RADIAL JOINTS
$>2' - 15'$	18"
16' - 28'	2'
29' - 41'	3'
42' - 55'	4'
56' - 68'	5'
69' - 82'	6'
83' - 96'	7'
97' - 110'	8'
OVER 110'	

#### FINISH SURFACE AND TOLERANCES FOR SLOPED GRANITE CURB

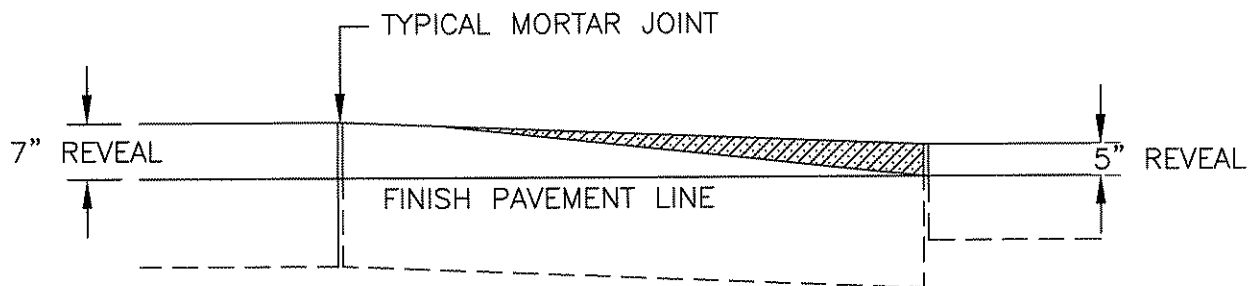
AREA	FINISH SURFACE	TOLERANCE
<u>ARRIS LINES</u>	STRAIGHT AND TRUE ON TOP, FRONT AND ENDS. DRILL HOLES NOT DEEPER THAN $\frac{1}{4}"$ ALLOWED IN ARRIS LINES.	$+\frac{1}{4}"$ TO $-\frac{1}{4}"$
<u>FACES</u>		
EXPOSED PART	PLANES; NO DRILL HOLES IN FACES LONGER THAN 8" OR DEEPER THAN $\frac{1}{4}"$ .	$+1"$ TO $-1"$
CONCEALED PART	DRILL HOLES NOT OBJECTIONABLE.	
<u>ENDS</u>	SQUARE WITH FACE EXCEPT AS INDICATED.	
<u>JOINTS</u>	ON TANGENT, MAXIMUM WIDTH: 1".	$+\frac{1}{2}"$ TO $-\frac{1}{2}"$
	ON CURVES OVER 15' RADIUS, WIDEN TOP OR BOTTOM FROM 1" AS NECESSARY.	$+\frac{1}{2}"$ TO $-\frac{1}{2}"$
	ON CURVES WITH 15' RADIUS AND UNDER, USE RADIAL JOINTS OR CURVED CURB AS INDICATED. OPTIMUM WIDTH: 1"	$+\frac{1}{2}"$ TO $-\frac{1}{2}"$

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-	-	-		
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## SLOPED GRANITE CURB

DRAWING NO. C-2

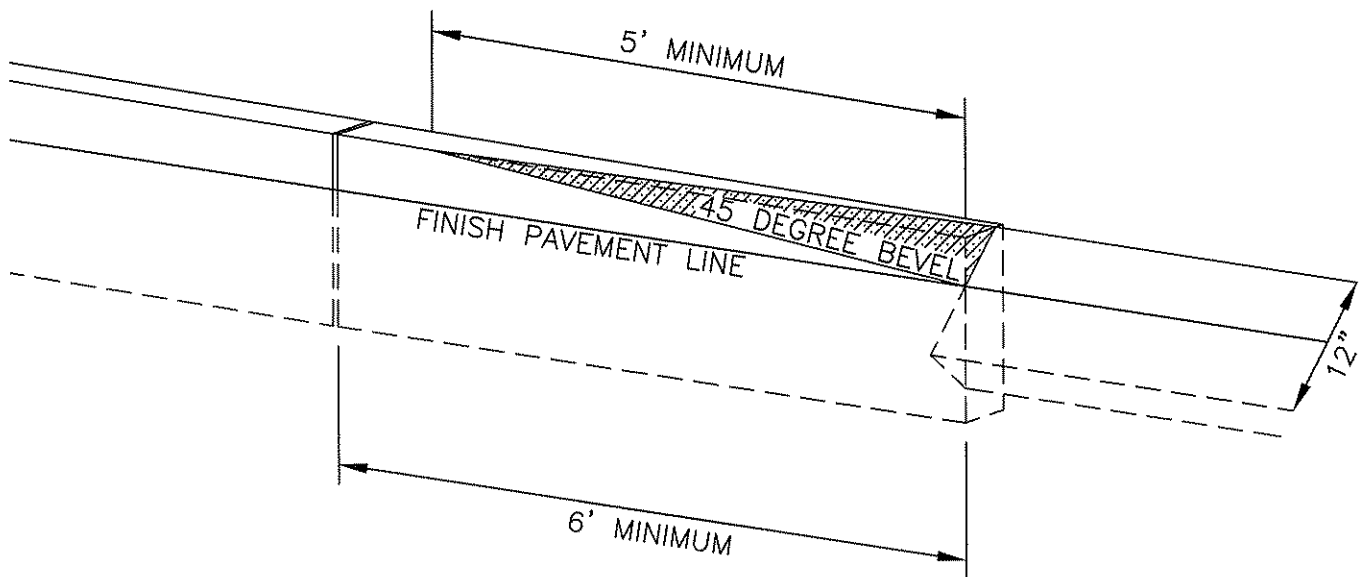
DATE: 12/08 PAGE: 1



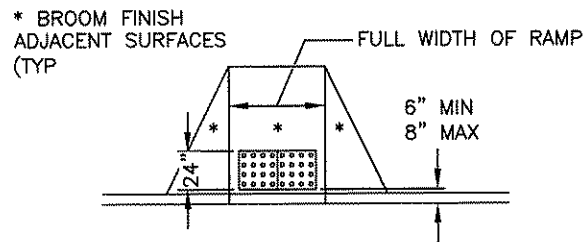
TYPICAL  
VERTICAL  
GRANITE  
CURB  
SECTION

TRANSITION  
CURB  
SECTION  
TIPPED DOWN

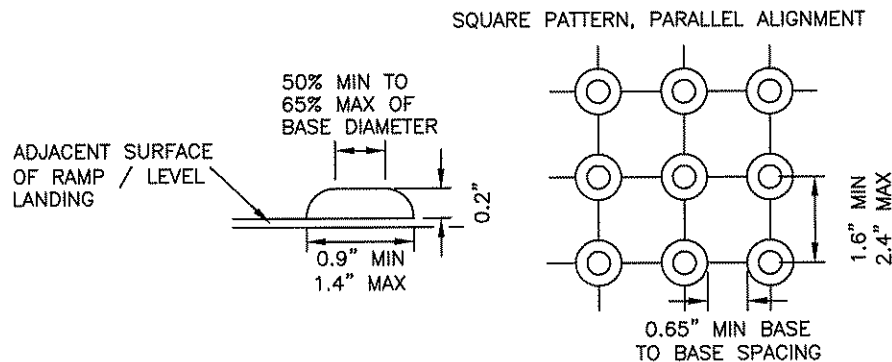
TYPICAL  
SLOPED  
GRANITE  
CURB  
SECTION



NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE/STREET
-	-	-	<b>SLOPE TO VERTICAL GRANITE CURB TRANSITION</b>	DRAWING NO.	C-3
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



### DETECTABLE WARNING PLACEMENT



### DETECTABLE WARNING DETAILS

#### NOTES:

1. DETECTABLE WARNING SURFACES SHALL BE CAST IRON WITHIN THE CITY R.O.W.
2. CONCRETE ADJACENT TO ALL DETECTABLE WARNINGS SHALL HAVE A BROOM FINISH.
3. THE COLOR OF THE DETECTABLE WARNING SHALL PROVIDE A VISUAL CONTRAST TO THE SURROUNDING SURFACE AND SHALL BE AS SPECIFIED ON THE PLANS.
4. WHERE A RAMP OR LEVEL LANDING MEETS A CURB RADIUS, ALIGN THE EDGE OF THE DETECTABLE WARNING AREA PARALLEL TO THE CURB TO THE MAXIMUM EXTENT FEASIBLE.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	<b>DETECTABLE WARNING PANEL DETAILS</b>	DRAWING NO. CR-1
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
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GENERAL NOTES:

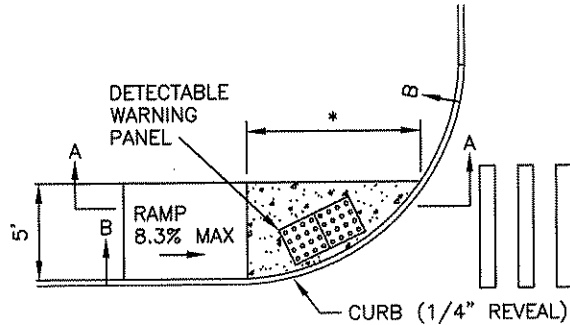
1. THE DIMENSIONS AND GRADES SHOWN ON THIS STANDARD WILL BE ADHERED TO IN THE DESIGN AND THE CONSTRUCTION OF SIDEWALK RAMPS. WHERE SIDEWALKS RUN ADJACENT TO ROADWAYS ON STEEP (5% OR GREATER) GRADES, RAMP GRADES WILL BE AS FLAT AS POSSIBLE. (ON LOW SIDE OF DRIVES AND INTERSECTING SIDE STREETS, RAMPS SHALL SLOPE TOWARDS DRIVE OR SIDE STREET AT 2%)
2. NOMINAL RAMP DIMENSIONS AND GRADES:  
RAMP WIDTH - 5' MINIMUM  
RAMP SLOPE - 8.3% MAXIMUM  
FLARE SLOPE - 10% MAXIMUM  
RAMP CROSS SLOPE - 2% MAXIMUM
3. CURB RAMPS SHALL BE CONSTRUCTED OF 6" PORTLAND CEMENT CONCRETE (CLASS AA, 4000 PSI) WITH 6"x6" W2.9XW2.9 WOVEN WIRE FABRIC REINFORCING PLACED 2½" FROM THE TOP OF THE SLAB WITH 6" CRUSHED GRAVEL SUBBASE
4. ALL SIDEWALKS AND LANDINGS SHALL HAVE A CROSS SLOPE OF 2% DRAINING TOWARD THE STREET, DRIVE, OR PARKING AREA
5. A LEVEL LANDING (NO GREATER THAN 2% SLOPE IN ANY DIRECTION) SHALL BE PROVIDED AT THE TOP OF SIDEWALK RAMPS TO ALLOW FOR STOPPING AND MANEUVERING OF WHEELCHAIRS
6. LEVEL LANDINGS (NO GREATER THAN 2% SLOPE IN ANY DIRECTION) AT THE BOTTOM OF PERPENDICULAR RAMPS SHALL BE WHOLLY CONTAINED WITHIN MARKED CROSSWALKS
7. DUMMY JOINTS SHALL BE PROVIDED AT TRANSITIONS (GRADE CHANGES) AT TOPS AND BOTTOMS OF RAMPS AND FLARES
8. VERTICAL DROP-OFF EDGES TO RAMPS WILL NOT BE BUILT UNLESS THE RAMP ABUTS AN AREA WHICH WILL NOT BE USED BY PEDESTRIANS
9. A ¼" CURB REVEAL WILL BE PROVIDED WHERE THE RAMP ADJOINS THE ROADWAY
10. AT MARKED CROSSWALKS, THE FULL WIDTH OF THE RAMP OR LANDING SHALL BE CONTAINED WITHIN THE PAVEMENT MARKINGS
11. RAMP FLARES SHOULD BE LOCATED OUTSIDE THE DIRECT LINE OF TRAVEL MOST LIKELY TO BE FOLLOWED BY THE VISUALLY IMPAIRED
12. SIGNS, POLES, PLANTERS, MAILBOXES, ETC., SHALL NOT BE LOCATED WHERE THEY WILL INTERFERE WITH THE USE OF SIDEWALK RAMPS
13. SIDEWALK RAMPS SHALL NOT BE LOCATED WHERE USERS MUST CROSS DROP INLET GRATES, MANHOLE COVERS, OR OTHER ACCESS LIDS. IF THIS CANNOT BE AVOIDED THEN GRATE DESIGN AND PLACEMENT SHALL CONFORM TO ADA REQUIREMENTS
14. CURB DRAINAGE SHOULD BE CONSTRUCTED SO AS TO PRECLUDE THE FLOW OF WATER PAST THE SIDEWALK RAMP
15. WHEREVER FEASIBLE, TWO SIDEWALK RAMPS ARE RECOMMENDED IN PREFERENCE TO A SINGLE RAMP
16. SIDEWALKS THAT ARE LESS THAN 5' WIDE REQUIRE 5' WIDE BY 5' LONG PASSING AREAS (NO GREATER THAN 2% CROSS SLOPE) AT INTERVALS NOT TO EXCEED 200'
17. E.O.P. = EDGE OF PAVEMENT
18. THE PUBLIC SIDEWALK CURB RAMP STANDARDS DEPICTED HERE MAY NOT BE APPROPRIATE FOR ALL LOCATIONS. FIELD CONDITIONS AT INDIVIDUAL LOCATIONS MAY REQUIRE SPECIFIC DESIGNS. DESIGNS MUST BE CONSISTENT WITH THE PROVISIONS OF THIS SHEET TO THE MAXIMUM EXTENT FEASIBLE ON ALTERATION PROJECTS AND WHEN STRUCTURALLY PRACTICABLE ON NEW CONSTRUCTION PROJECTS AS REQUIRED BY THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES

DETAILS WERE ORIGINALLY CREATED BY THE STATE OF VERMONT, AGENCY OF TRANSPORTATION

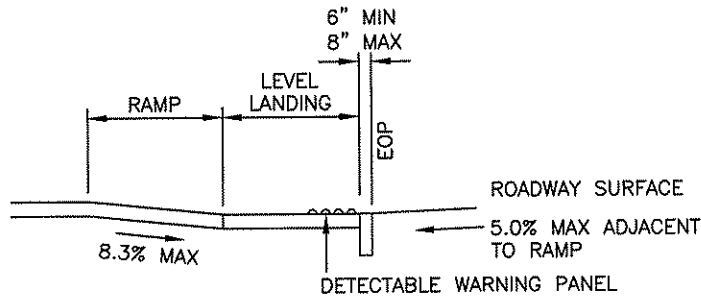
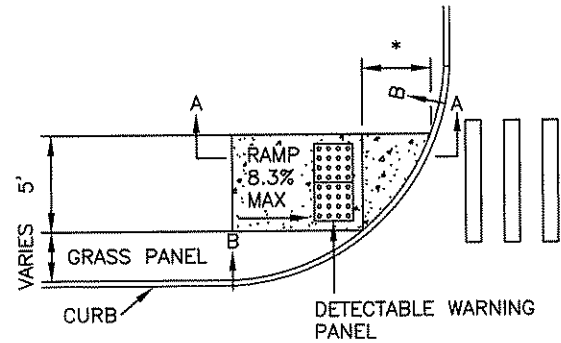
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET	
-	-	-	<b>SIDEWALK RAMP GENERAL NOTES</b>	DRAWING NO.	CR-2
-	-	-		DATE: 12/08	PAGE: 1
-	-	-			
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# SINGLE WALK STRAIGHT APPROACH TO PARALLEL RAMP

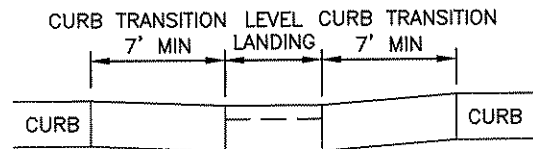
EXAMPLE 1: SIDEWALK ADJACENT TO CURB



EXAMPLE 2: SIDEWALK AND CURB SEPARATED BY GRASS PANEL



SECTION A-A

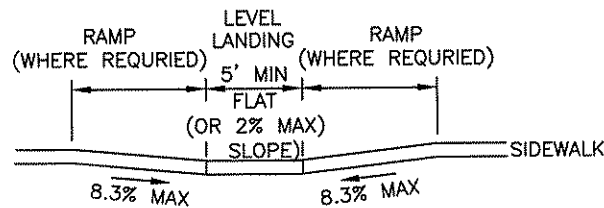
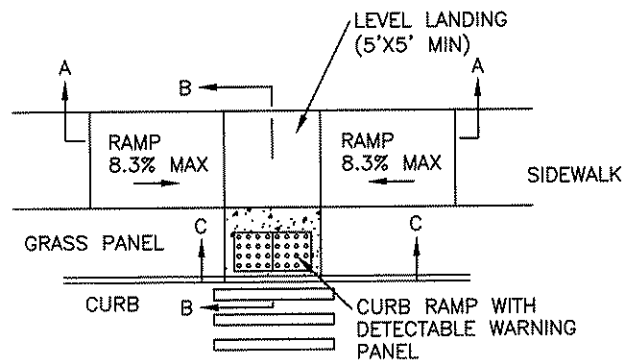


SECTION B-B

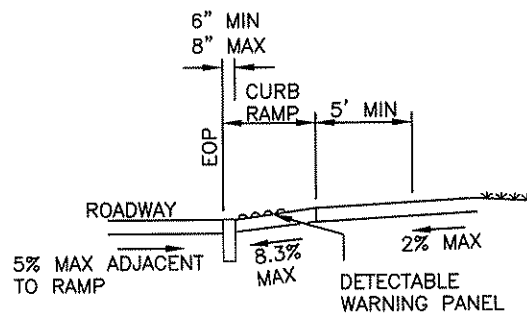
\* IF LESS THEN 5', DETECTABLE WARNING PANEL MAY BE PLACED ON RAMP, PERPENDICULAR TO THE DIRECTION OF TRAVEL

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	SIDEWALK RAMP TYPE 1	DRAWING NO. CR-3
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
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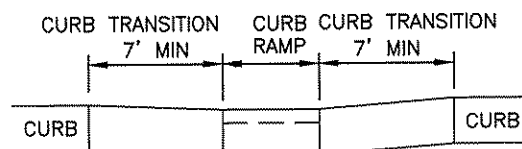
# SINGLE PERPENDICULAR RAMP FROM LEVEL LANDING TANGENT SECTION



SECTION A-A



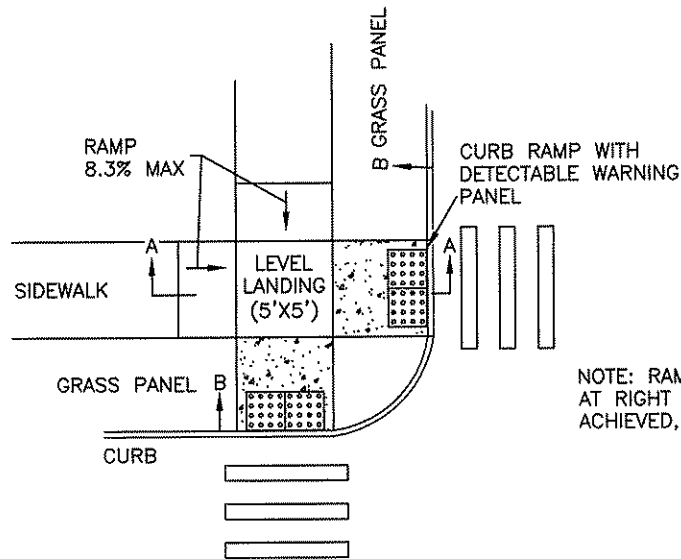
SECTION B-B



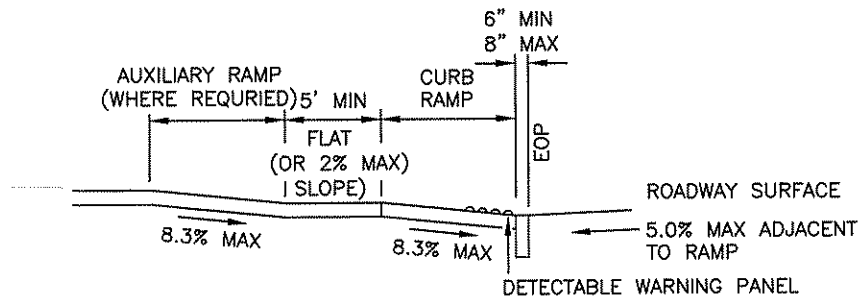
SECTION C-C

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	SIDEWALK RAMP TYPE 2	DRAWING NO. CR-4
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

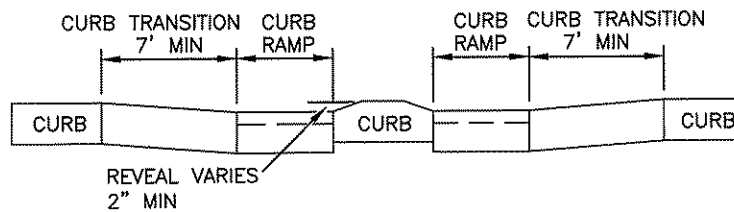
## TWO PERPENDICULAR RAMPS FROM LEVEL LANDING



NOTE: RAMPS MUST INTERSECT CURB AT RIGHT ANGLE. IF THIS CANNOT BE ACHIEVED, USE RAMP TYPE 6



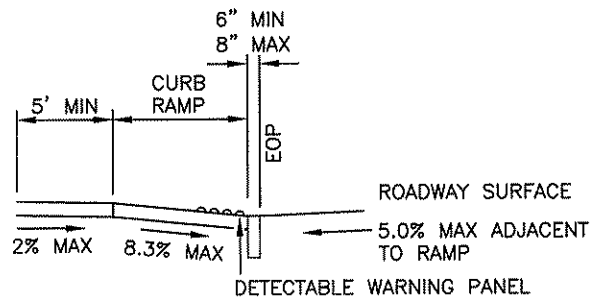
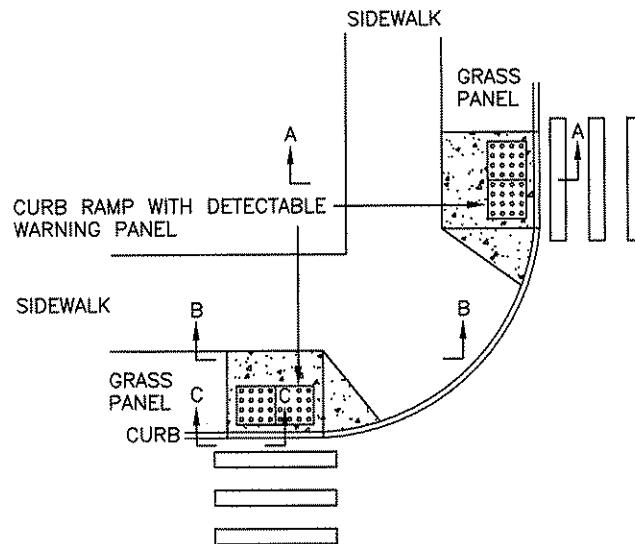
SECTION A-A



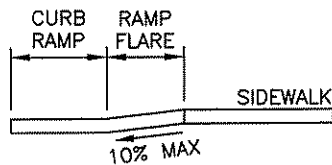
SECTION B-B

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE/STREET
-	-	-	<b>SIDEWALK RAMP TYPE 3</b>	DRAWING NO.	CR-5
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					

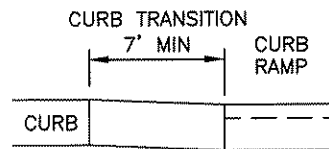
# RAMP OFFSET FROM DIRECT LINE OF PEDESTRIAN TRAVEL



SECTION A-A



SECTION B-B

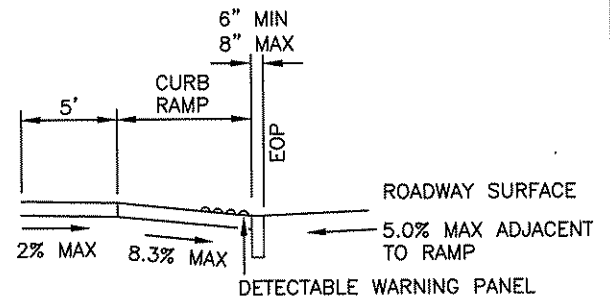
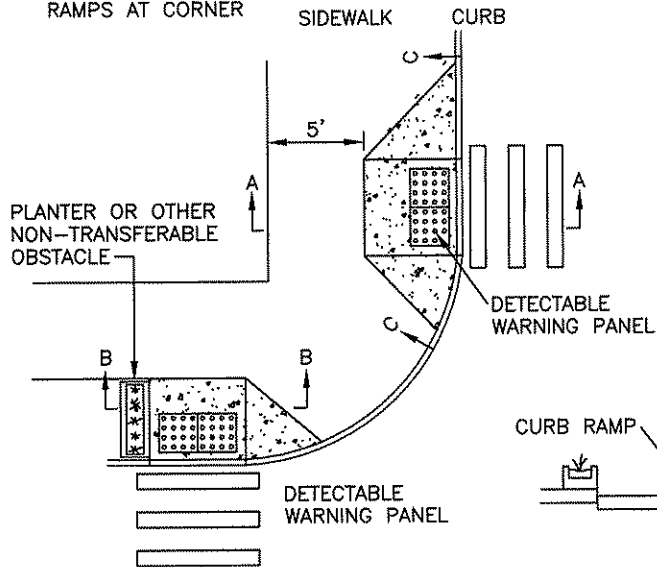


SECTION C-C

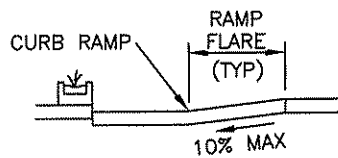
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	SIDEWALK RAMP TYPE 4	DRAWING NO. CR-6
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

# PERPENDICULAR RAMP IN URBAN SETTING – WIDE SIDEWALK

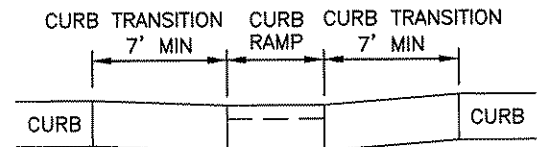
EXAMPLE 1: PAIRED RAMPS AT CORNER



SECTION A-A

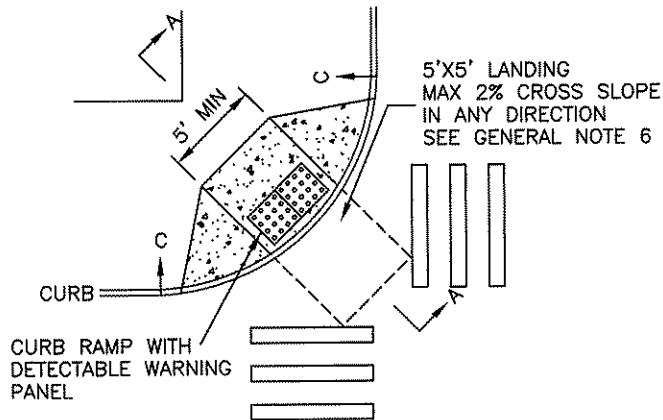


SECTION B-B

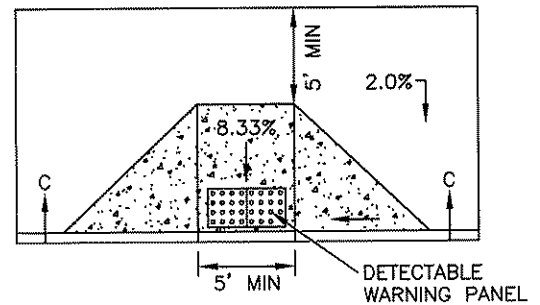


SECTION C-C

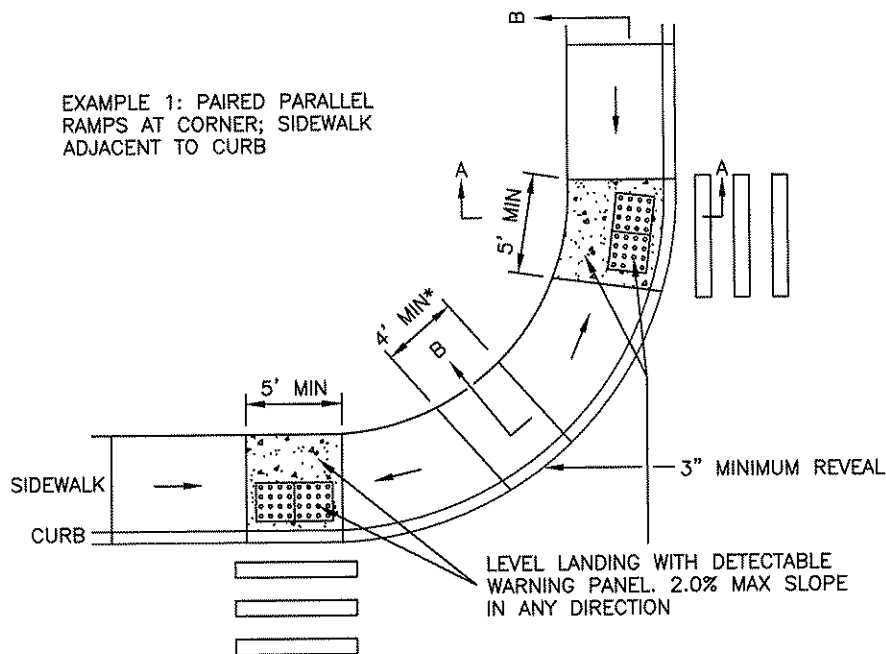
EXAMPLE 2: SINGLE RAMP ON CORNER RADIUS



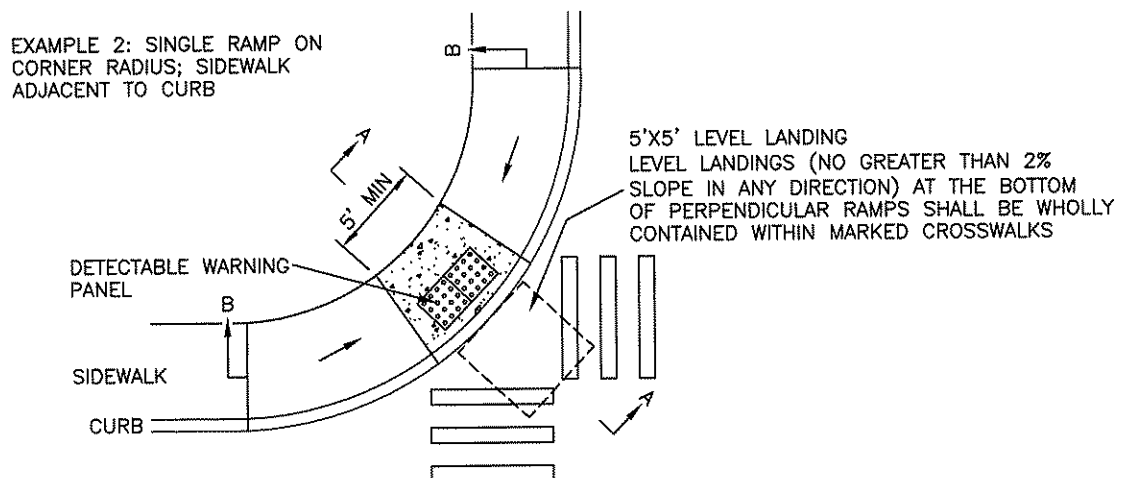
EXAMPLE 3: RAMP ON TANGENT SECTION



NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	SIDEWALK RAMP TYPE 5	DRAWING NO. CR-7
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

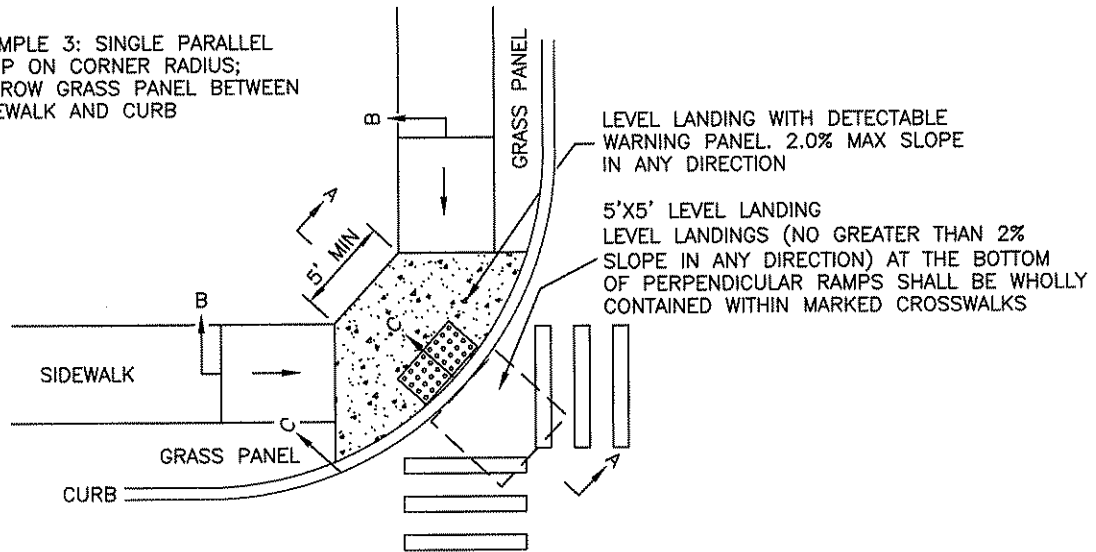


\* WHERE A 4' MINIMUM SEPARATION BETWEEN RAMPS CANNOT BE ATTAINED, THE SIDEWALK SHOULD REMAIN AT THE SAME ELEVATION AS ADJOINING LEVEL LANDINGS

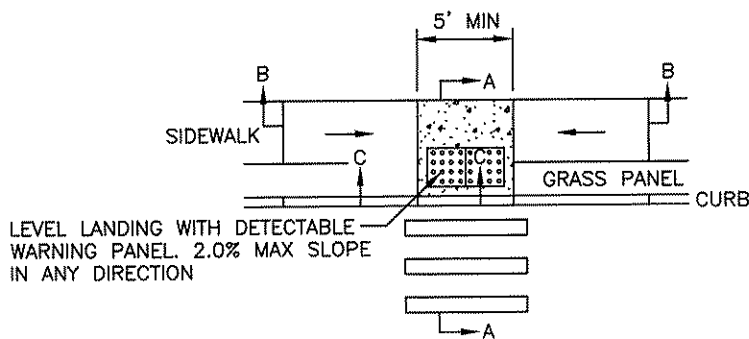


NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	<b>SIDEWALK RAMP TYPE 6, EXAMPLES 1 &amp; 2</b>	DRAWING NO. CR-8
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

EXAMPLE 3: SINGLE PARALLEL  
RAMP ON CORNER RADIUS;  
NARROW GRASS PANEL BETWEEN  
SIDEWALK AND CURB



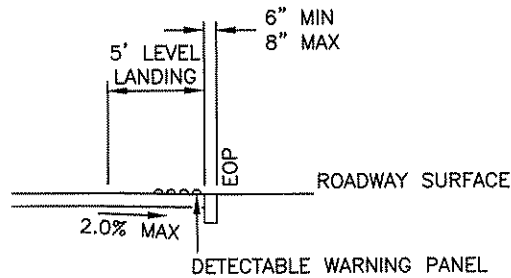
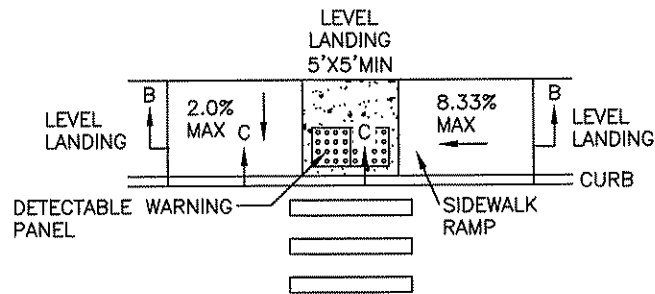
EXAMPLE 4: SINGLE RAMP ON  
TANGENT; NARROW GRASS PANEL



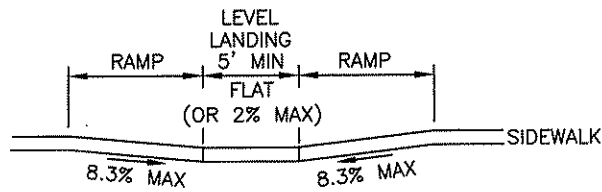
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	SIDEWALK RAMP TYPE 6, EXAMPLES 3 & 4	DRAWING NO. CR-9
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



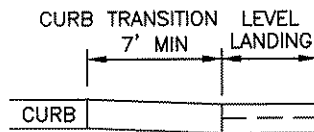
EXAMPLE 5: SINGLE RAMP ON TANGENT:  
SIDEWALK ADJACENT TO CURB



SECTION A-A



SECTION B-B

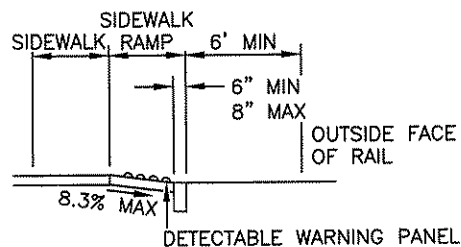


SECTION C-C

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	SIDEWALK RAMP TYPE 6, EXAMPLE 5 AND TYPE 6 SECTIONS	DRAWING NO. CR-10
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

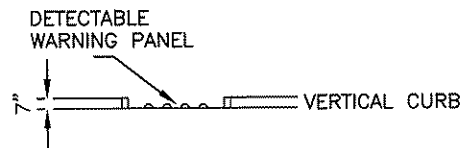
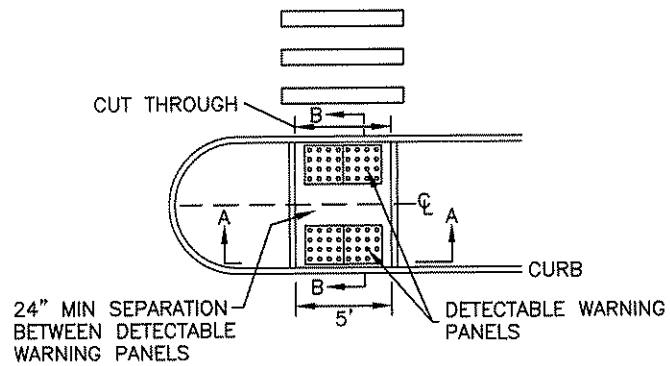
The diagram illustrates the required dimensions and layout for a detectable warning panel on a sidewalk. Key features include:

- 4' MIN LEVEL LANDING:** A clear area before the panel.
- 6' MIN:** Minimum clearances on both sides of the panel.
- 8.3% MAX SLOPE:** The maximum allowable longitudinal slope of the sidewalk.
- 2% MAX CROSS SLOPE:** The maximum allowable cross-slope of the sidewalk.
- DETECTABLE WARNING PANEL:** The central safety feature, shown with a grid of raised dots.
- 6" MIN 8" MAX:** The required width of the panel.
- ARROW A:** Indicates the direction of travel.

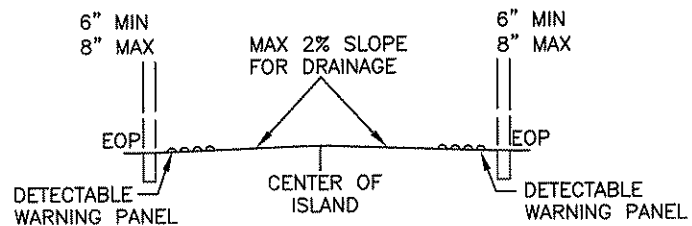


NOTE: WHERE A PEDESTRIAN GATE IS PROVIDED ACROSS THE SIDEWALK, THE NEAREST EDGE OF THE DETECTABLE WARNING PANEL SHALL BE A MINIMUM OF 2' FROM THE FACE OF THE GATE ARM.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET	
—	—	—	RAILROAD CROSSING	DRAWING NO. CR-11	
—	—	—		DATE: 12/08	
—	—	—		PAGE: 1	
APPROVED BY:					

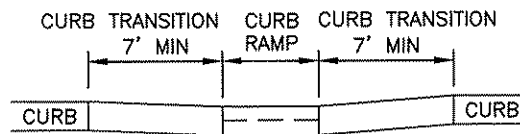
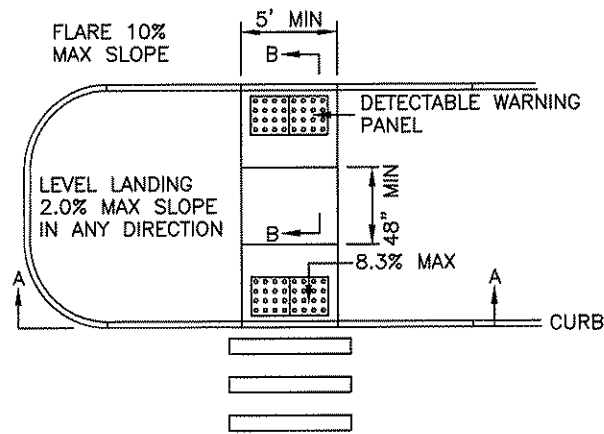


SECTION A-A

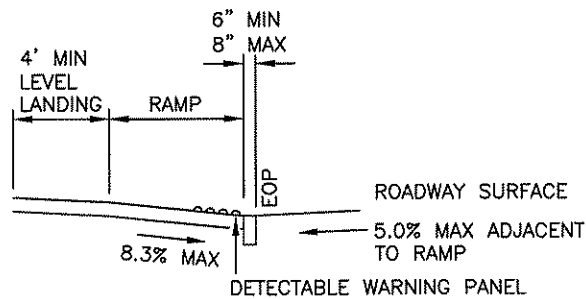


SECTION B-B

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE/STREET
-	-	-	<p><b>MEDIAN ISLAND CUT THROUGH</b></p>	DRAWING NO.	CR-12
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



SECTION A-A



SECTION B-B

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	<b>RAMPS AT WIDE MEDIAN ISLANDS</b>	DRAWING NO. CR-13
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

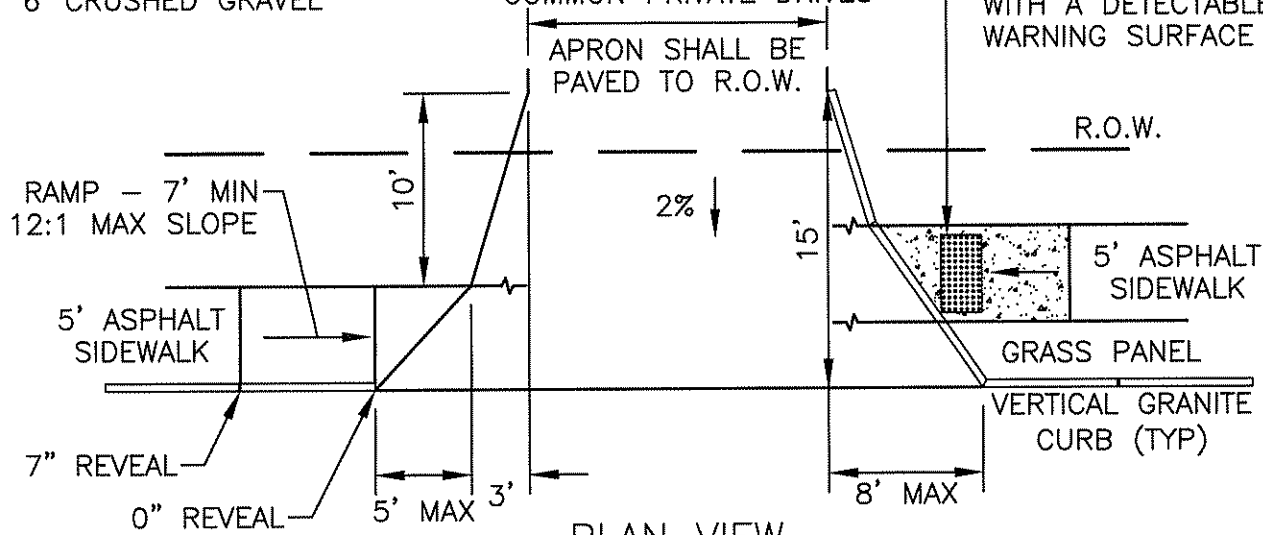
# MINIMUM MATERIAL VALUES

1½" WEAR COURSE PAVEMENT  
1½" BASE COURSE PAVEMENT  
6" CRUSHED GRAVEL

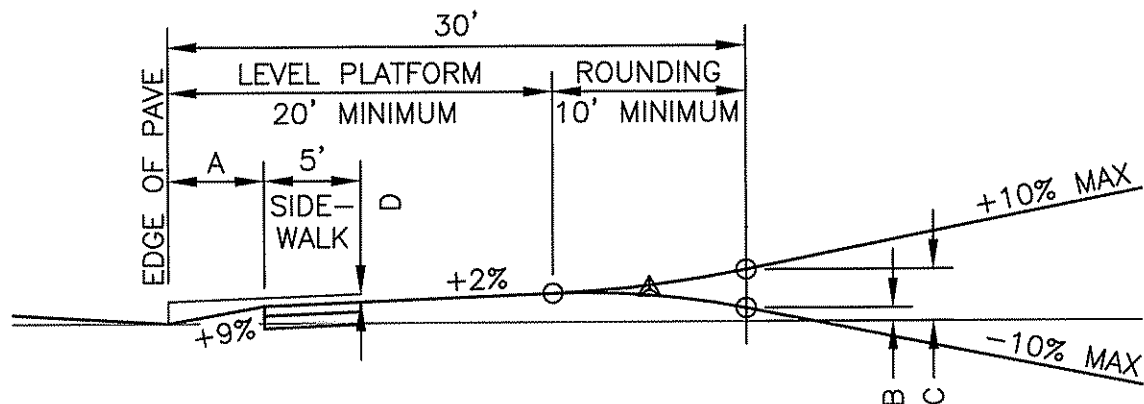
MEASURED AT R.O.W.

12' MIN/28' MAX  
22' MIN FOR RESIDENTIAL  
COMMON PRIVATE DRIVES

COMMERCIAL DRIVES ONLY:  
CONCRETE CURB RAMP  
WITH A DETECTABLE  
WARNING SURFACE



PLAN VIEW



PROFILE

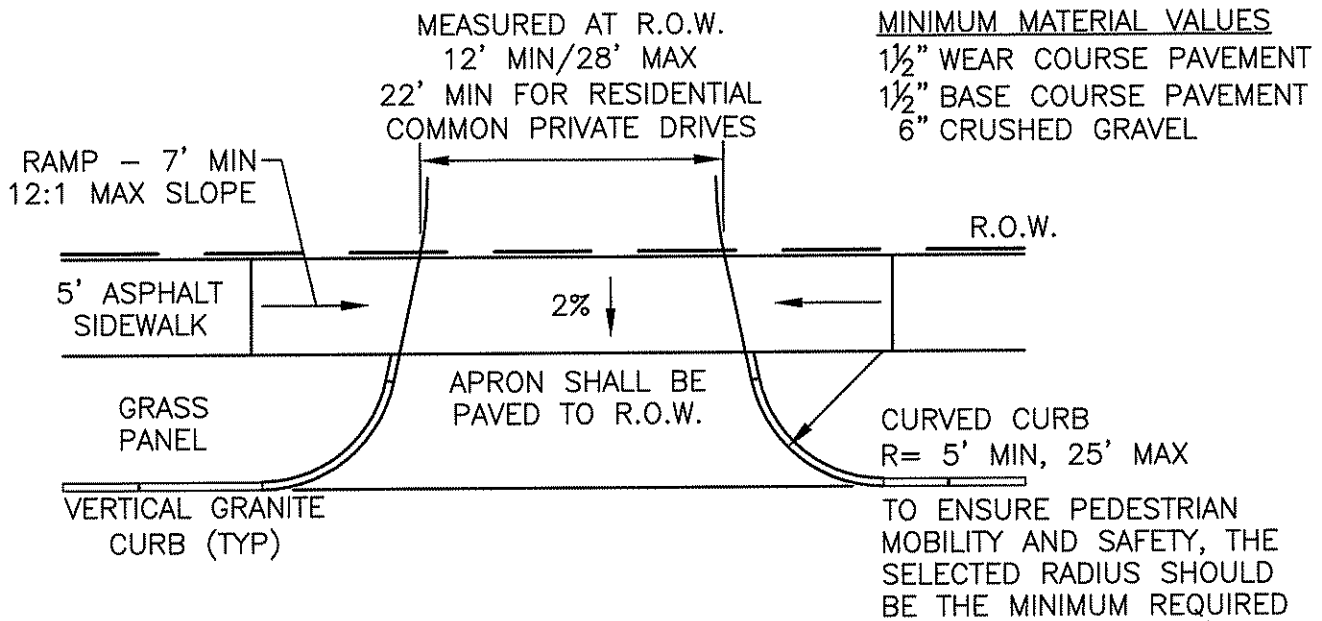
- A -WIDTH OF GRASS PANEL
- B -VERTICAL OFFSET AT 30' FOR DRIVES IN FILL
- C -VERTICAL OFFSET AT 30' FOR DRIVES IN CUT
- D -VERTICAL DROP OF SIDEWALK

VERTICAL CURB			
A	B	C	D
0	0	1'-0"	7"
1'	¾"	1'-¾"	6"
2'	1¾"	1'-1¾"	5¼"
3'	2½"	1'-2½"	4¼"
4'	3¼"	1'-3¼"	3½"

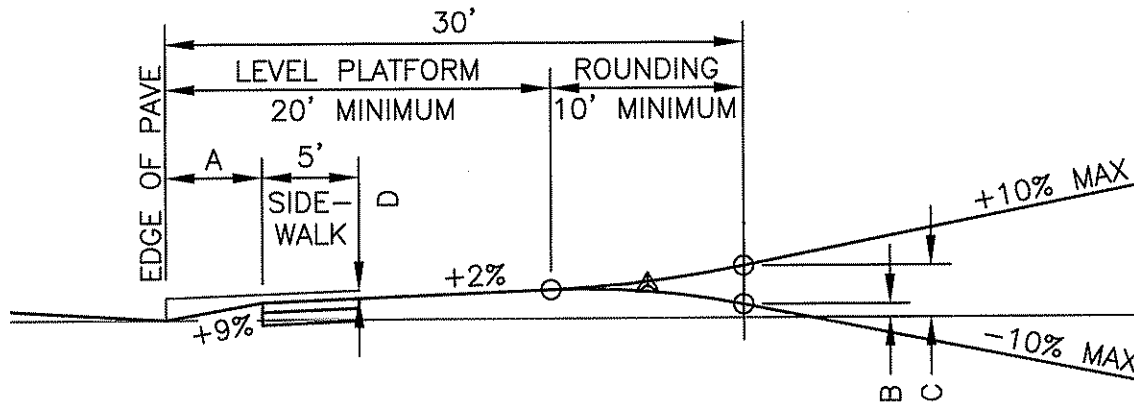
## NOTE:

1. THE DRIVE WIDTHS AND PROFILE PERTAIN TO ALL URBAN DRIVES, REGARDLESS OF R.O.W. WIDTH OR SIDEWALK LOCATION
2. FOR COMMERCIAL DRIVES, DETECTABLE WARNING PANELS SHALL BE PLACED PERPENDICULAR TO THE SIDEWALK WITH THE NEAREST EDGE 6" TO 8" FROM THE DRIVE.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	URBAN DRIVE WITH VERTICAL GRANITE CURB, GRASS PANEL WIDTH <5'	DRAWING NO. D-1
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



PLAN VIEW



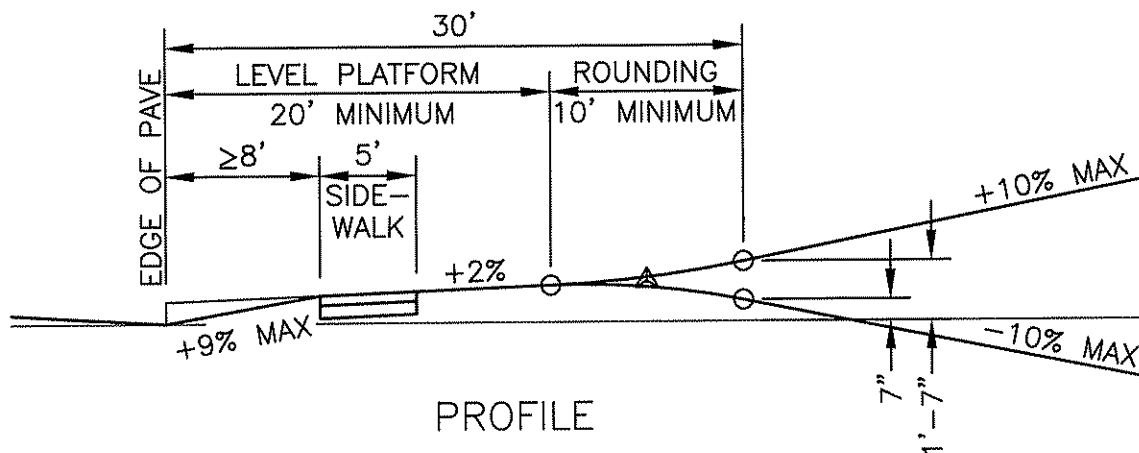
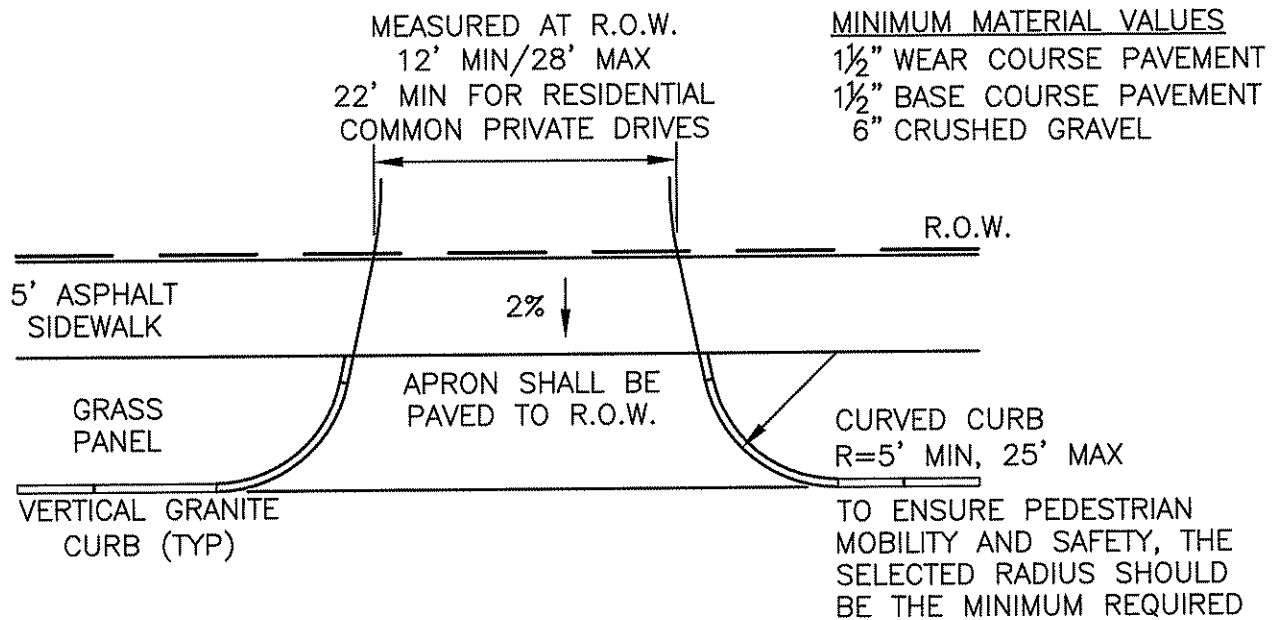
PROFILE

- A -WIDTH OF  
GRASS PANEL
- B -VERTICAL OFFSET  
AT 30' FOR  
DRIVES IN FILL
- C -VERTICAL OFFSET  
AT 30' FOR  
DRIVES IN CUT
- D -VERTICAL DROP  
OF SIDEWALK

VERTICAL CURB			
A	B	C	D
5'	4¼"	1'-4¼"	2¾"
6'	5"	1'-5"	1¾"
7'	6"	1'-6"	1"

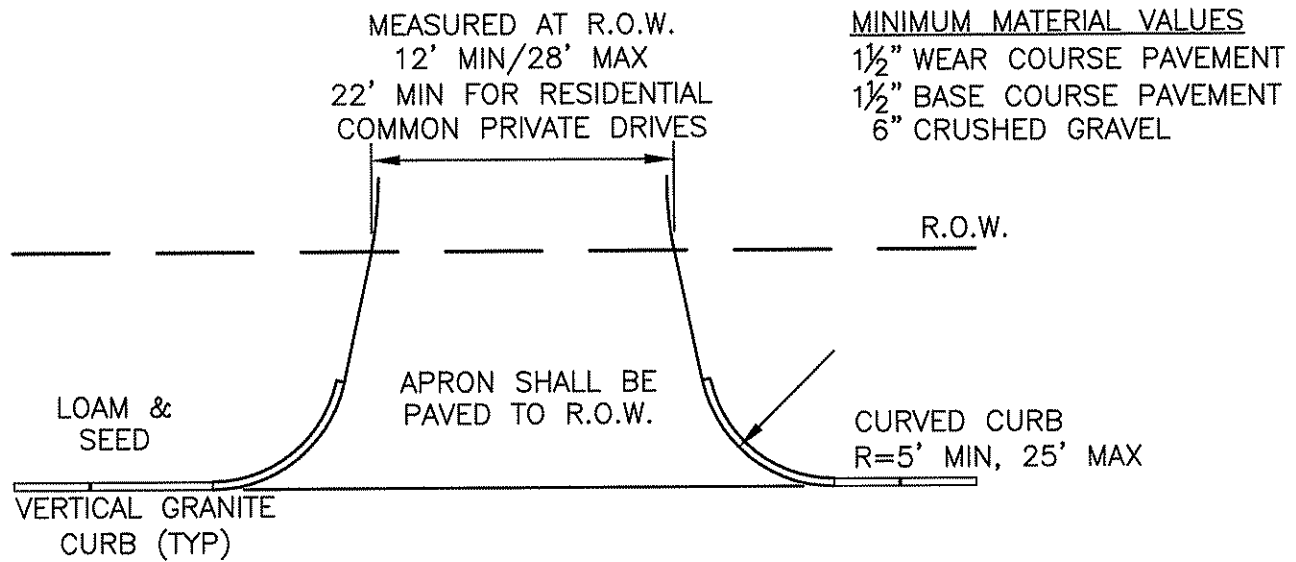
NOTE: THE DRIVE WIDTHS AND PROFILE PERTAIN TO ALL URBAN DRIVES,  
REGARDLESS OF R.O.W. WIDTH OR SIDEWALK LOCATION

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	URBAN DRIVE WITH VERTICAL GRANITE CURB, AND GRASS PANEL BETWEEN 5' AND 8' WIDE	DRAWING NO. D-2
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

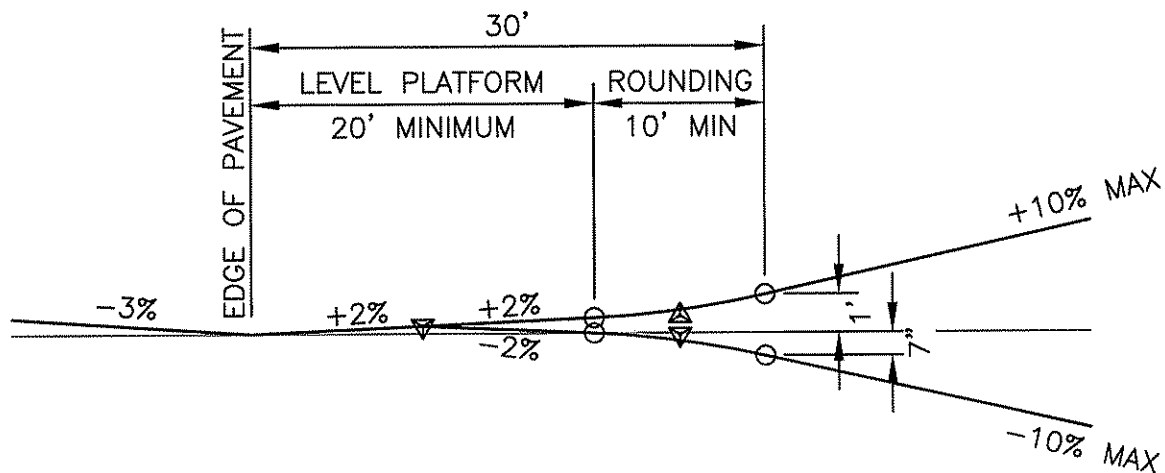


NOTE: THE DRIVE WIDTHS AND PROFILE PERTAIN TO ALL URBAN DRIVES,  
REGARDLESS OF R.O.W. WIDTH OR SIDEWALK LOCATION

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	URBAN DRIVE WITH VERTICAL GRANITE CURB, GRASS PANEL WIDTH ≥8'	DRAWING NO. D-3
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



PLAN VIEW



PROFILE

NOTE: THE DRIVE WIDTHS AND PROFILE PERTAIN TO ALL URBAN DRIVES, REGARDLESS OF R.O.W. WIDTH

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	URBAN DRIVE WITH VERTICAL GRANITE CURB, W/O SIDEWALK	DRAWING NO. D-4
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



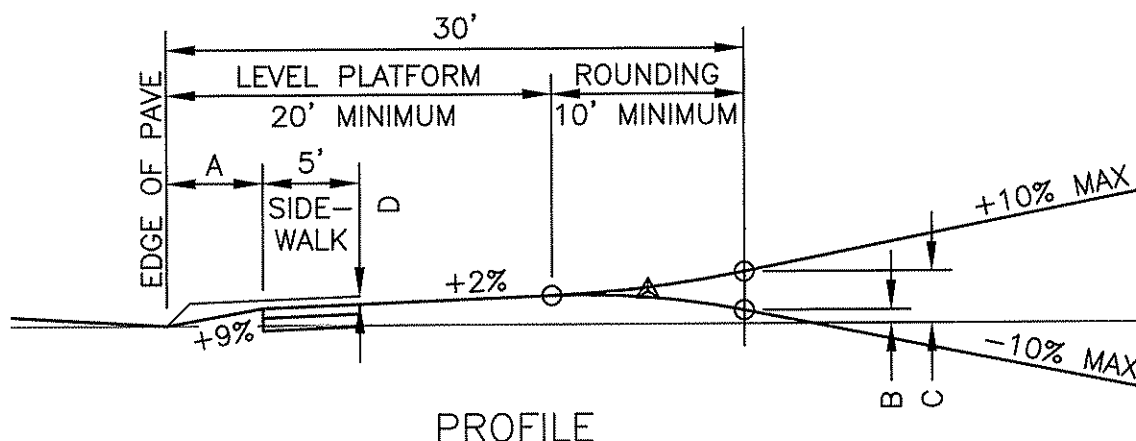
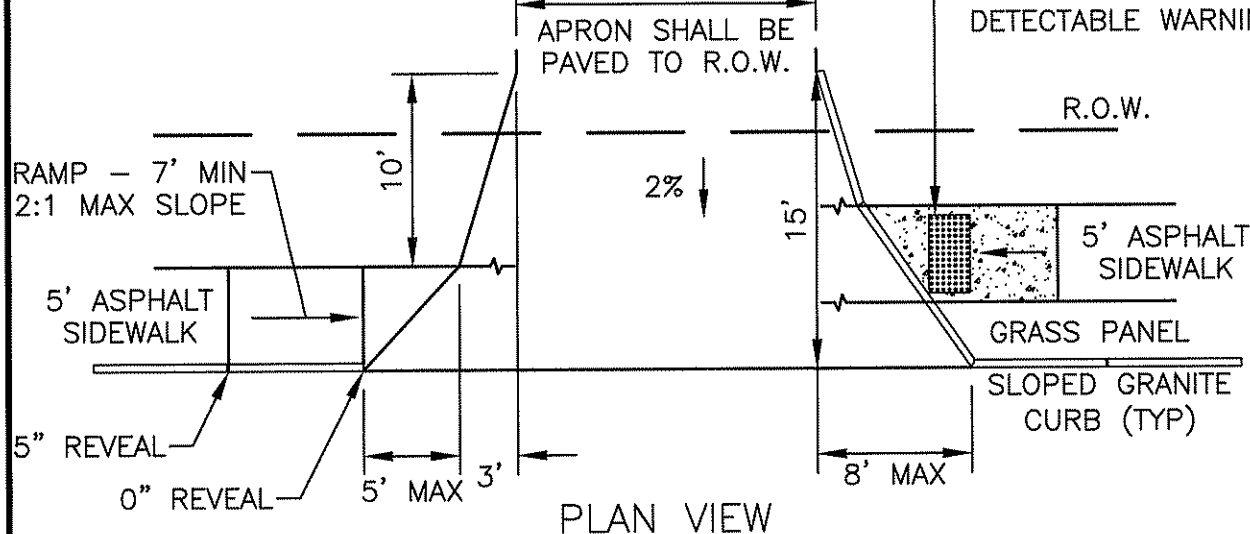
# MINIMUM MATERIAL VALUES

1/2" WEAR COURSE PAVEMENT  
1/2" BASE COURSE PAVEMENT  
6" CRUSHED GRAVEL

MEASURED AT R.O.W.

12' MIN/28' MAX  
22' MIN FOR RESIDENTIAL  
COMMON PRIVATE DRIVES

COMMERCIAL DRIVES ONLY:  
WHERE "A" IS <5', CONSTRUCT  
CONCRETE CURB RAMP WITH  
DETECTABLE WARNING SURFACES



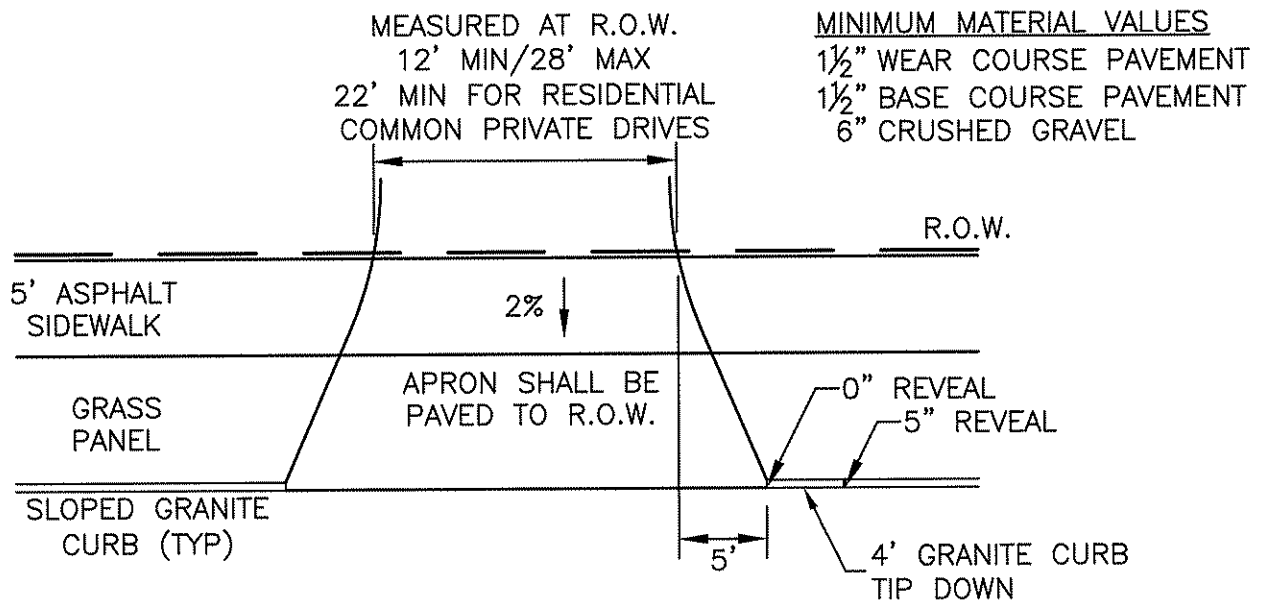
- A -WIDTH OF GRASS PANEL
- B -VERTICAL OFFSET AT 30' FOR DRIVES IN FILL
- C -VERTICAL OFFSET AT 30' FOR DRIVES IN CUT
- D -VERTICAL DROP OF SIDEWALK

SLOPED CURB			
A	B	C	D
0	0	1'-0"	5"
1'	3/4"	1'-3/4"	4"
2'	1 3/4"	1'-1 3/4"	3 3/4"
3'	2 1/2"	1'-2 1/2"	2 1/4"
4'	3 3/4"	1'-3 3/4"	1 1/2"
5'	5"	1'-4 1/4"	3/4"

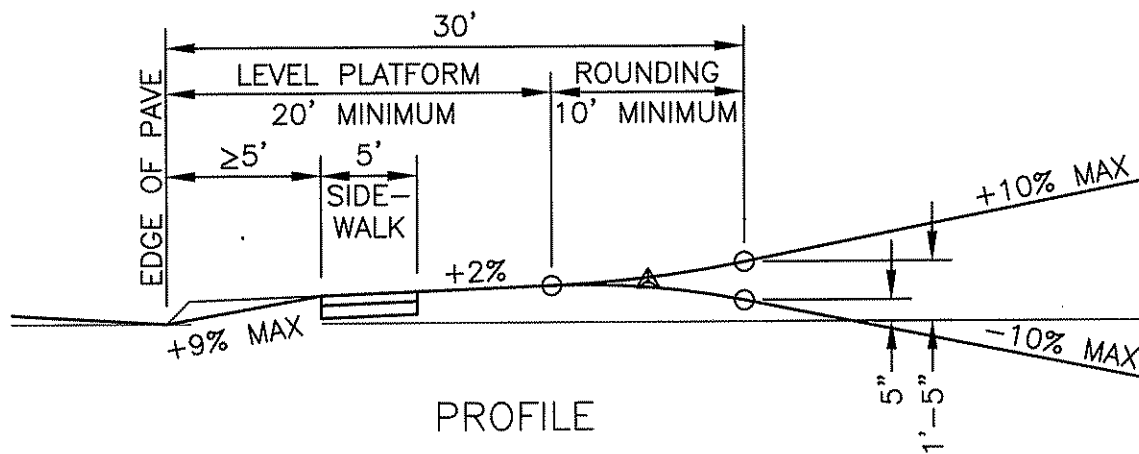
## NOTE:

- THE DRIVE WIDTHS AND PROFILE PERTAIN TO ALL URBAN DRIVES, REGARDLESS OF R.O.W. WIDTH OR SIDEWALK LOCATION
- FOR COMMERCIAL DRIVES, DETECTABLE WARNING PANELS SHALL BE PLACED PERPENDICULAR TO THE SIDEWALK WITH THE NEAREST EDGE 6" TO 8" FROM THE DRIVE.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	URBAN DRIVE WITH SLOPED GRANITE CURB, GRASS PANEL WIDTH <6'	DRAWING NO. D-5
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



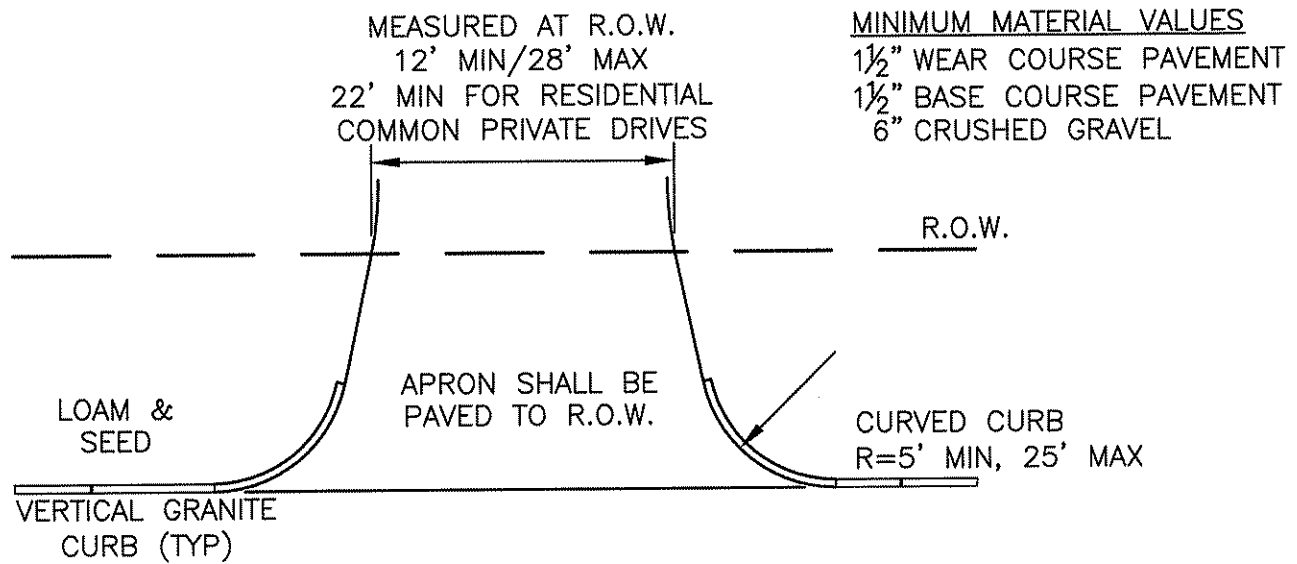
PLAN VIEW



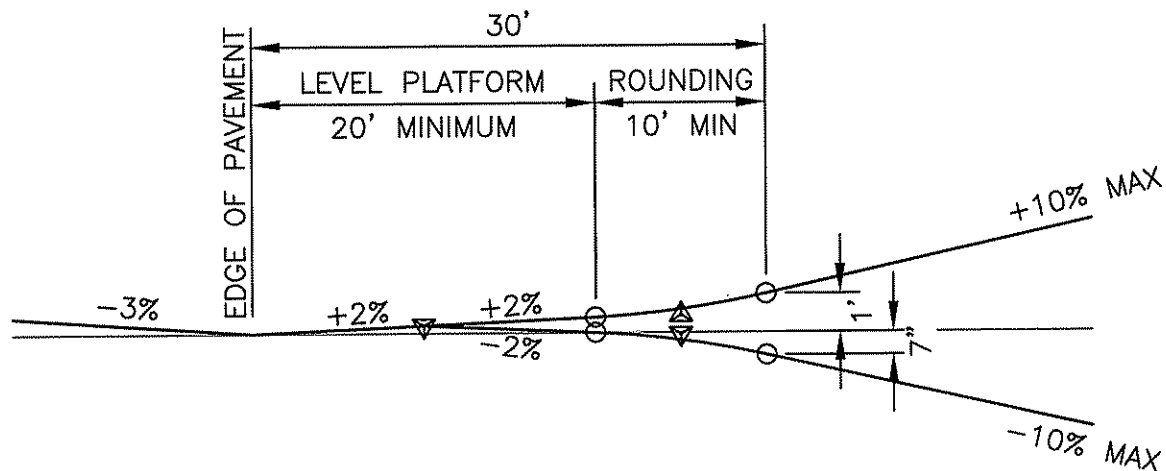
PROFILE

NOTE: THE DRIVE WIDTHS AND PROFILE PERTAIN TO ALL URBAN DRIVES,  
REGARDLESS OF R.O.W. WIDTH OR SIDEWALK LOCATION

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE/STREET
-	-	-	URBAN DRIVE WITH SLOPED GRANITE CURB, GRASS PANEL WIDTH ≥6'	DRAWING NO.	D-6
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



PLAN VIEW



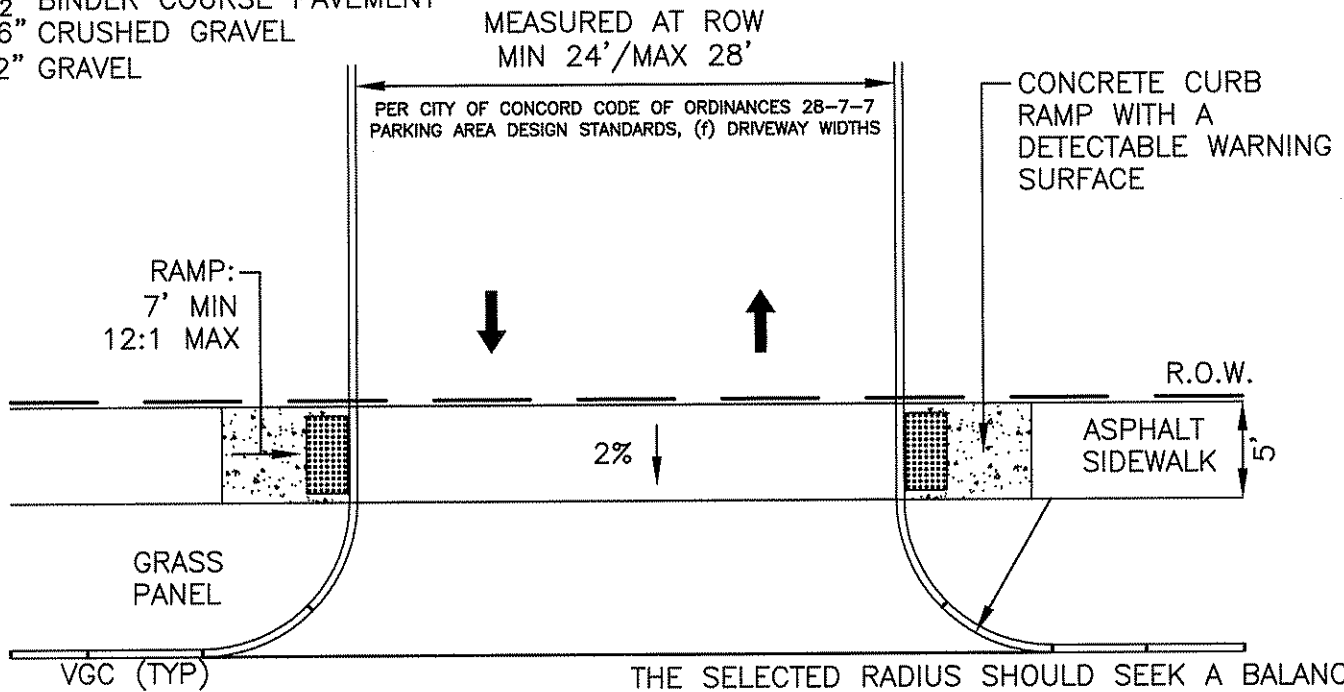
PROFILE

NOTE: THE DRIVE WIDTHS AND PROFILE PERTAIN TO ALL URBAN DRIVES, REGARDLESS OF R.O.W. WIDTH

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE/STREET
-	-	-	URBAN DRIVE WITH SLOPED GRANITE CURB, W/O SIDEWALK	DRAWING NO.	D-7
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					

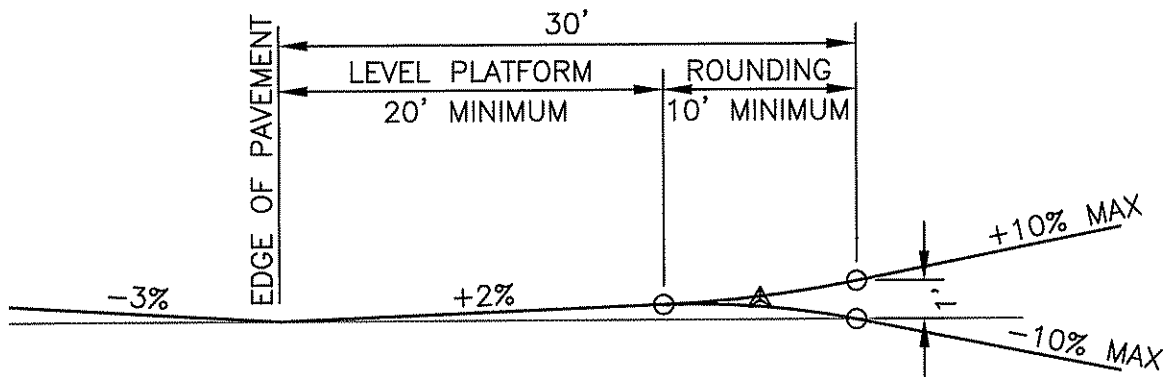
# MINIMUM MATERIAL VALUES

- 1½" WEAR COURSE PAVEMENT
- 1½" BINDER COURSE PAVEMENT
- 6" CRUSHED GRAVEL
- 12" GRAVEL



THE SELECTED RADIUS SHOULD SEEK A BALANCE BETWEEN ACCOMMODATING TURNING VEHICLES AND ENSURING PEDESTRIAN MOBILITY AND SAFETY. A WIDER DRIVEWAY WIDTH WITH A SMALLER RADIUS MAY BE A BETTER CHOICE TO ACCOMPLISH THIS GOAL.

## PLAN VIEW

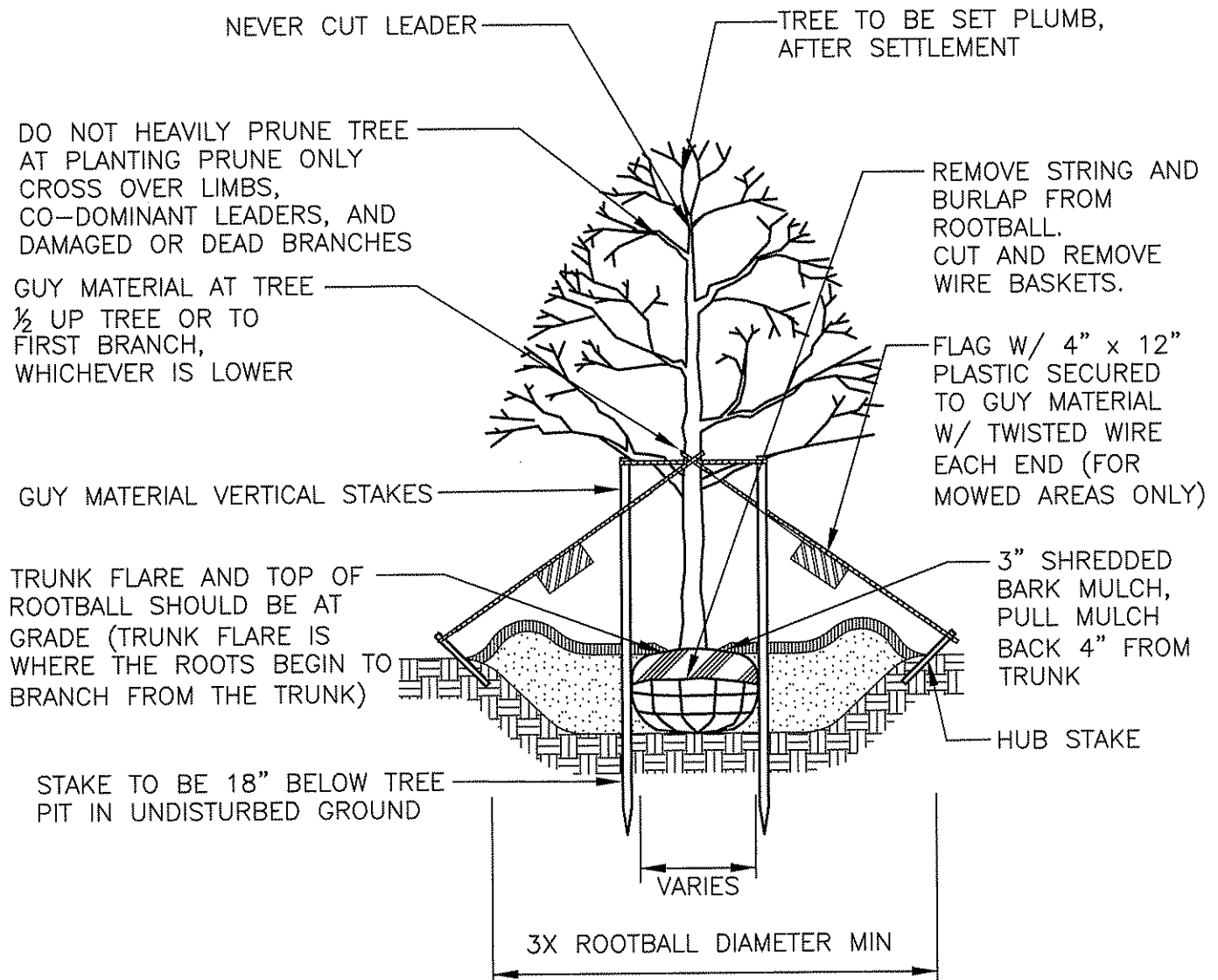


## PROFILE

NOTE: THIS DETAIL IS TO BE USED FOR SITES WHERE THE DRIVEWAY REQUIRES TRAFFIC SIGNALS AND/OR ACTS AS A STREET.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE/STREET
-	-	-	MAJOR COMMERCIAL DRIVE	DRAWING NO.	D-8
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					

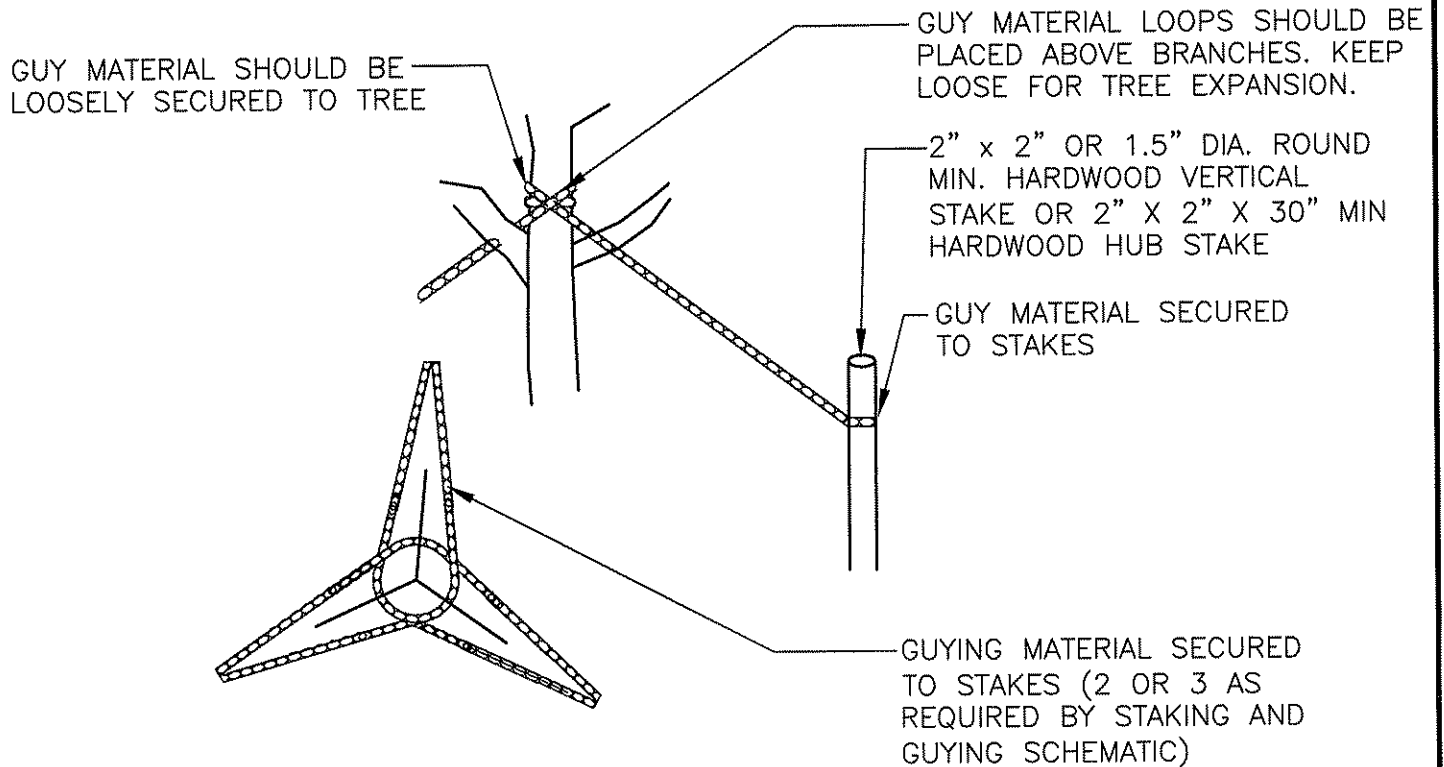
RDWY-Driveway Details.dwg



#### NOTES:

1. GUYING AND STAKING TO BE DETERMINED IN THE FIELD BY THE LANDSCAPE ARCHITECT. LOCAL FIELD CONDITIONS AS WELL AS PLANT CHARACTERISTICS WILL DETERMINE THE NECESSITY OF GUYING AND STAKING.
2. TYPICALLY ONLY TREES WITH A 3" OR GREATER CALIPER NEED TO BE STAKED. TREES WITH LESS THAN A 3" CALIPER NEED TO BE STAKED ONLY AS REQUIRED BY LANDSCAPE ARCHITECT.
3. ONLY WRAP TREE TRUNKS AS REQUIRED BY LANDSCAPE ARCHITECT.
4. TREE SHALL BE SET PLUMB, AFTER SETTLEMENT.
5. LOAM FOR BACKFILLING SHALL BE AMENDED AS REQUIRED BY LANDSCAPE ARCHITECT.
6. CITY TREES PLANTED ON PRIVATE PROPERTY, ADJACENT TO A PUBLIC RIGHT-OF-WAY, NEED TO BE PLANTED A MINIMUM OF 5 FEET FROM THE EDGE OF THE CITY SIDEWALK.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	LANDSCAPE
-	-	-	<b>DECIDUOUS TREE PLANTING</b>	DRAWING NO.	L-1
-	-	-		DATE:	12/08
-	-	-			1
APPROVED BY:					



NOTE:  
ONLY USE PLASTIC CHAINLOCK (LANDSCAPE QUALITY AND SUITABLE FOR GUYING TREES) OR EQUIVALENT GUYING MATERIAL.

NO.	REVISION	DATE	City of Concord Engineering Services Division		SECTION: LANDSCAPE	
-	-	-	<b>DECIDUOUS TREE – GUYING &amp; STAKING</b>		DRAWING NO.	L-2
-	-	-			DATE:	12/08
-	-	-				1
APPROVED BY:						

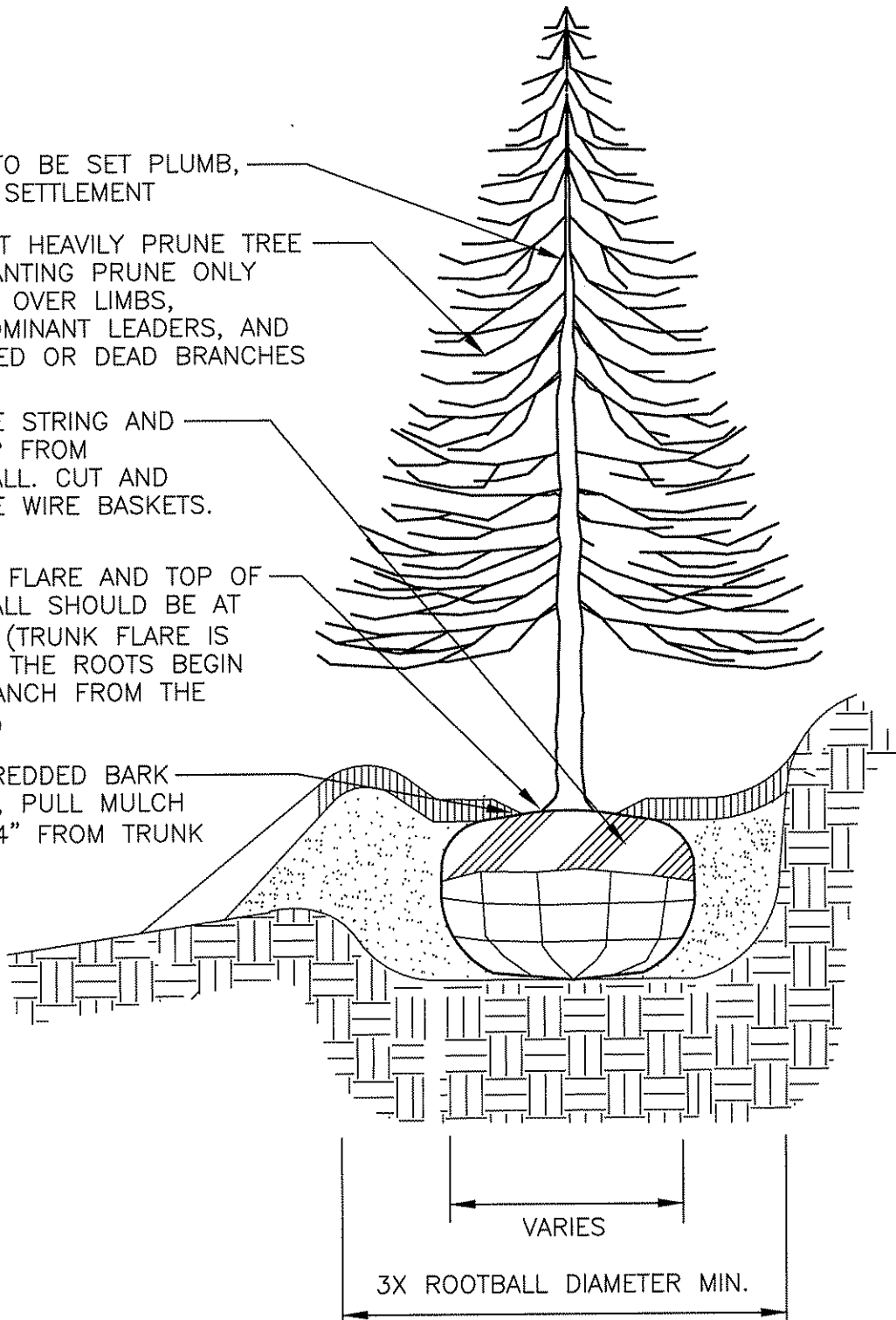
TREE TO BE SET PLUMB,  
AFTER SETTLEMENT

DO NOT HEAVILY PRUNE TREE  
AT PLANTING PRUNE ONLY  
CROSS OVER LIMBS,  
CO-DOMINANT LEADERS, AND  
DAMAGED OR DEAD BRANCHES

REMOVE STRING AND  
BURLAP FROM  
ROOTBALL. CUT AND  
REMOVE WIRE BASKETS.

TRUNK FLARE AND TOP OF  
ROOTBALL SHOULD BE AT  
GRADE (TRUNK FLARE IS  
WHERE THE ROOTS BEGIN  
TO BRANCH FROM THE  
TRUNK)

3" SHREDDED BARK  
MULCH, PULL MULCH  
BACK 4" FROM TRUNK



**NOTES:**

1. DO NOT STAKE EVERGREEN TREES.
2. LOAM FOR BACKFILLING SHALL BE AMENDED AS REQUIRED BY LANDSCAPE ARCHITECT.
3. TAMP BACKFILL SOIL AROUND ROOTBALL FIRMLY TO MINIMIZE ROOTBALL SHIFT.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	LANDSCAPE
-	-	-	<b>EVERGREEN PLANTING</b>	DRAWING NO.	L-3
-	-	-		DATE:	12/08
-	-	-			1
APPROVED BY:					



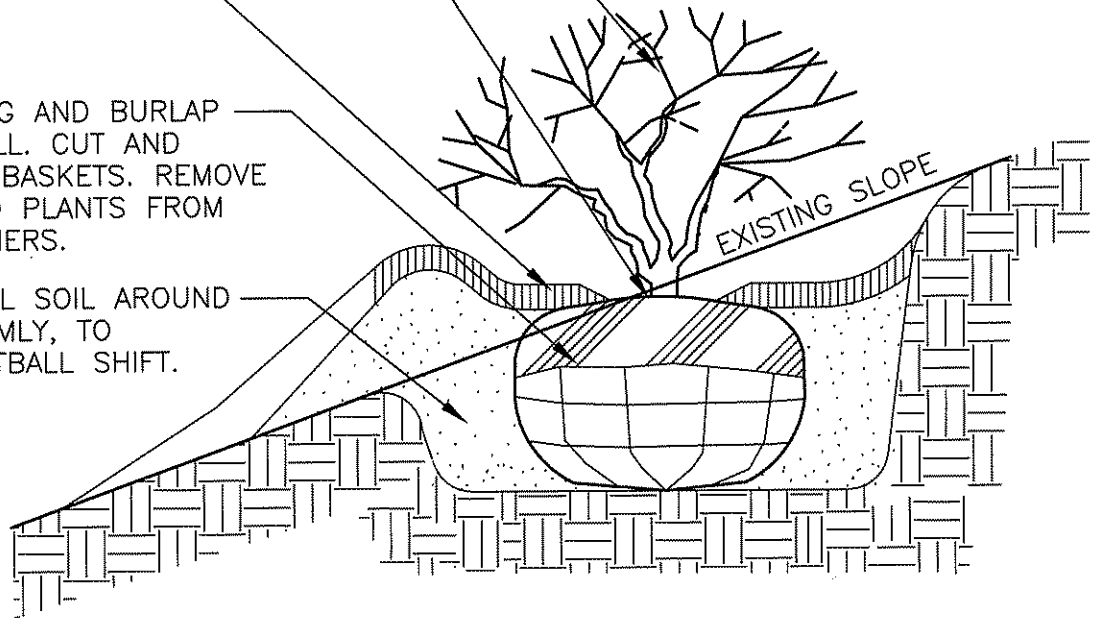
SHRUB TO BE SET PLUMB,  
AFTER SETTLEMENT

TRUNK FLARE AND TOP OF  
ROOTBALL SHOULD BE AT  
GRADE (TRUNK FLARE IS  
WHERE THE ROOTS BEGIN  
TO BRANCH FROM THE  
TRUNK)

3" SHREDDED BARK  
MULCH, PULL MULCH  
BACK 4" FROM  
TRUNK

REMOVE STRING AND BURLAP  
FROM ROOTBALL. CUT AND  
REMOVE WIRE BASKETS. REMOVE  
CONTAINERIZED PLANTS FROM  
THEIR CONTAINERS.

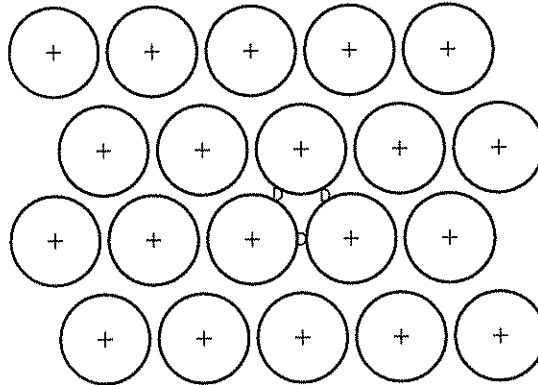
TAMP BACKFILL SOIL AROUND  
ROOTBALL FIRMLY, TO  
MINIMIZE ROOTBALL SHIFT.



NOTE:

1. DO NOT HEAVILY PRUNE SHRUB AT PLANTING, PRUNE ONLY CROSSOVER LIMBS AND DAMAGED OR DEAD BRANCHES.
2. BACKFILL WITH LOAM, AMEND AS REQUIRED BY LANDSCAPE ARCHITECT.
3. SHRUBS & GROUNDCOVER PLANTED ADJACENT TO CITY SIDEWALKS NEED TO BE PLACED SO THE PLANTS, AT THEIR MATURE HEIGHT & WIDTH, WILL NOT ENCROACH INTO THE CITY'S SIDEWALK.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: LANDSCAPE	
—	—	—	SHRUB PLANTING	DRAWING NO. L-4	
—	—	—		DATE: 12/08	
—	—	—		PAGE: 1	
APPROVED BY:					



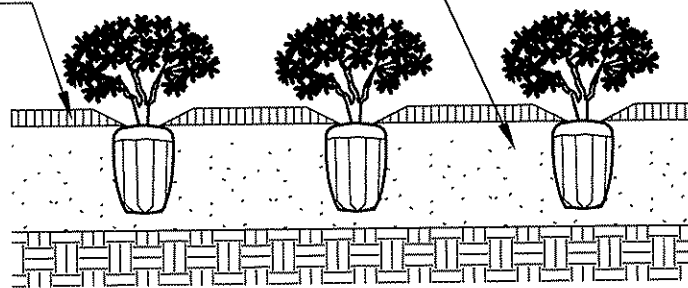
TYPICAL BED PLANT SPACING

NOTE:

D = DIMENSION OF PLANT SPACING (SHRUB OR  
GROUND COVER AS INDICATED ON PLANS)

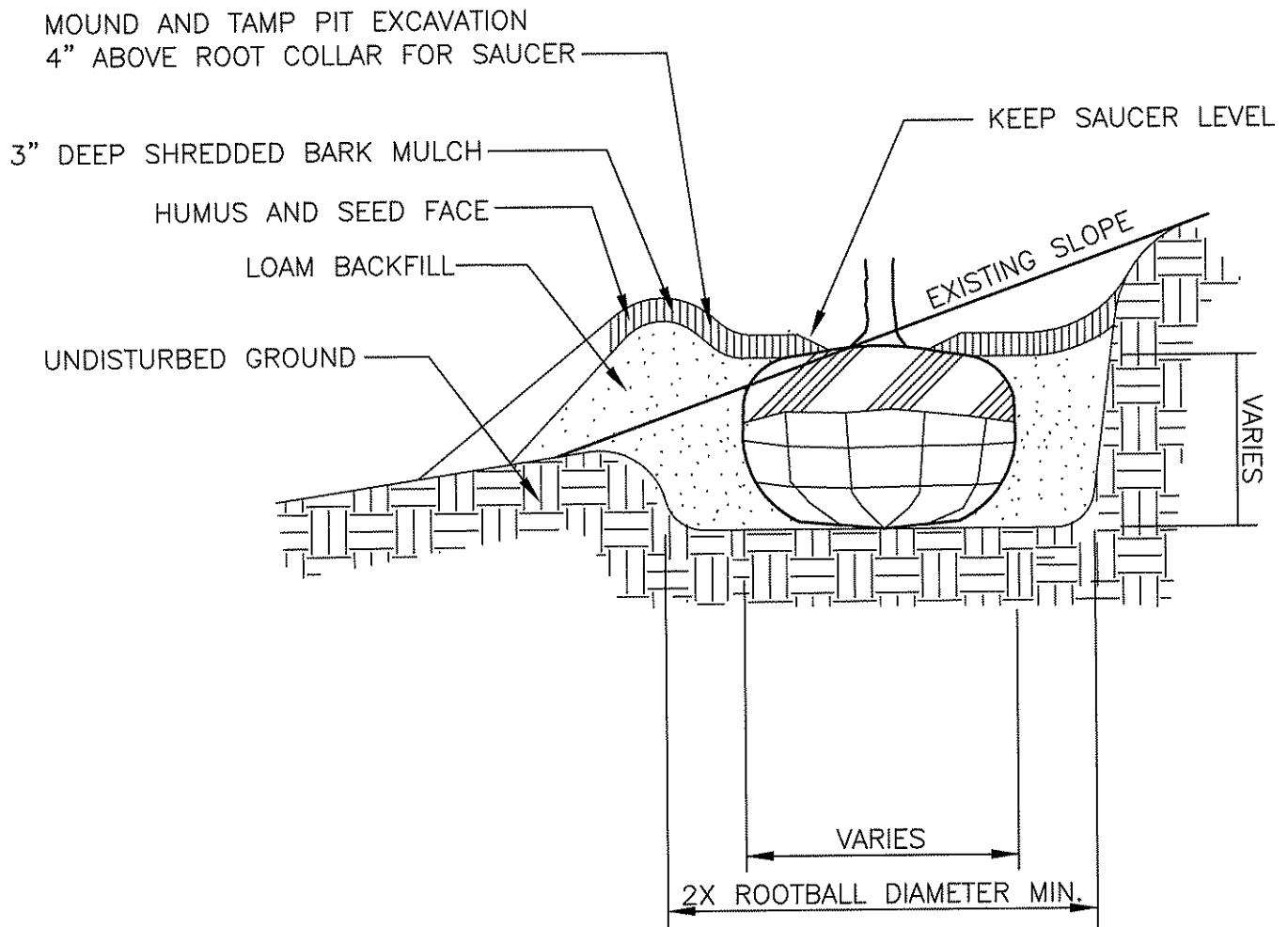
12" LOAM BACKFILL (CONTINUOUS  
THROUGHOUT BED AREA)

3" DEEP SHREDDED  
BARK MULCH



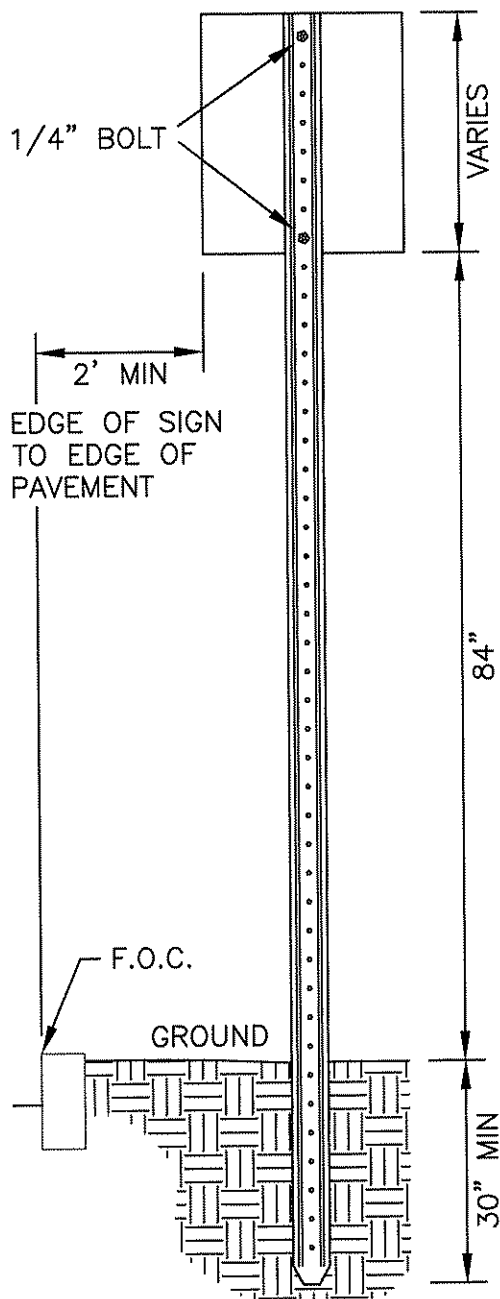
GROUND COVER BED PLANTING

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: LANDSCAPE	
—	—	—	GROUNDCOVER PLANTING	DRAWING NO. L-5	
—	—	—		DATE: 12/08	
—	—	—		PAGE: 1	
APPROVED BY:					



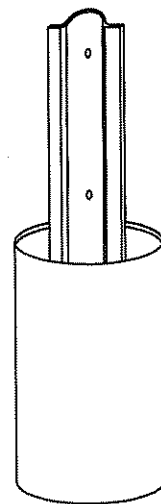
TYPICAL PLANTING PIT ON SLOPE 4:1 OR GREATER

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	LANDSCAPE
-	-	-	TREE PLANTING ON SLOPE	DRAWING NO.	L-6
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



NOTES:

1. POSTS SHALL BE PLUMB. ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND REPLACED. CUTTING THE DAMAGED PORTION OUT AND SPLICING THE POST TOGETHER IS NOT ACCEPTABLE.
2. WHEN POSTS ARE SET, THE HOLES SHALL BE DUG TO THE PROPER DEPTH. AFTER INSERTING POSTS, THE HOLES SHALL BE BACK FILLED WITH SUITABLE MATERIAL IN LAYERS NOT EXCEEDING 6" DEEP WHEN COMPACTED; CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST.
3. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED. AFTER DRIVING, THE TOP OF THE POST SHALL HAVE THE SAME CROSS-SECTIONAL DIMENSION AS THE BODY OF THE POST. BATTERED HEADS WILL NOT BE ACCEPTED.
4. POSTS SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.
5. SIGNS SHALL BE ERECTED IN CONFORMANCE WITH THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES"
6. WHEN SIGN IS IN PLACE, NO PART OF THE POST SHALL EXTEND ABOVE SIGN.

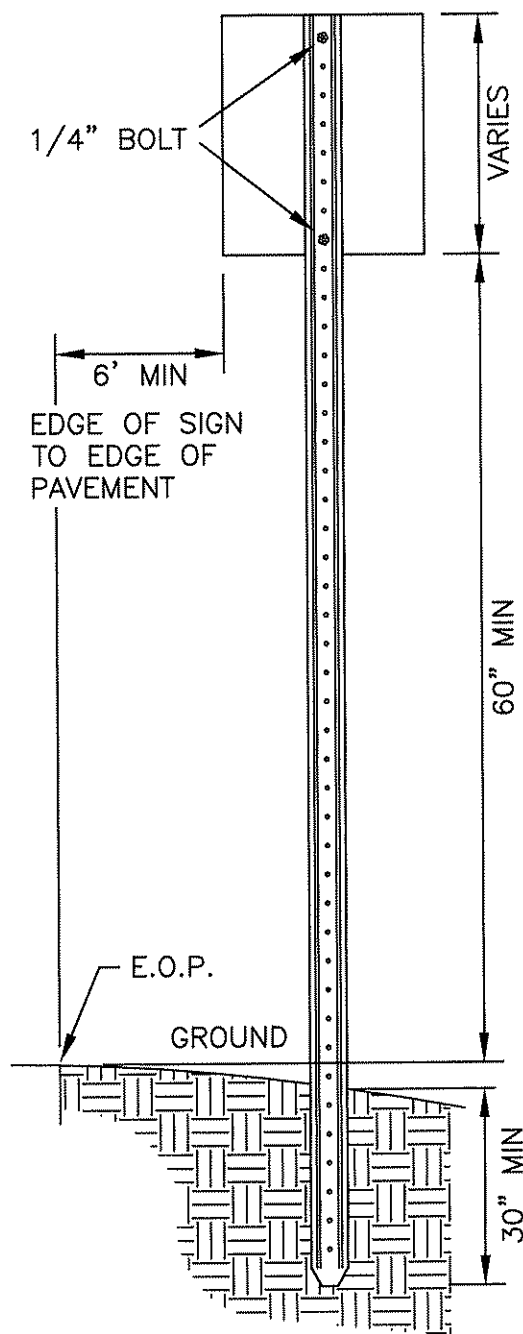


GREEN ENAMEL, 3# / FT  
FLANGED CHANNEL STEEL  
POST

PVC OR STEEL SLEEVE  
REQUIRED IN PAVED OR  
CONCRETE LOCATIONS

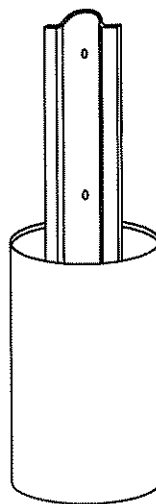
SLEEVE WILL BE LARGE  
ENOUGH TO ALLOW FOR  
REPLACEMENT POST

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	<b>ROAD SIGN POST and SLEEVE - URBAN</b>	DRAWING NO. M-1
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



# NOTES:

1. POSTS SHALL BE PLUMB. ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND REPLACED. CUTTING THE DAMAGED PORTION OUT AND SPLICING THE POST TOGETHER IS NOT ACCEPTABLE.
2. WHEN POSTS ARE SET, THE HOLES SHALL BE DUG TO THE PROPER DEPTH. AFTER INSERTING POSTS, THE HOLES SHALL BE BACK FILLED WITH SUITABLE MATERIAL IN LAYERS NOT EXCEEDING 6" DEEP WHEN COMPACTED; CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST.
3. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED. AFTER DRIVING, THE TOP OF THE POST SHALL HAVE THE SAME CROSS-SECTIONAL DIMENSION AS THE BODY OF THE POST. BATTERED HEADS WILL NOT BE ACCEPTED.
4. POSTS SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.
5. SIGNS SHALL BE ERECTED IN CONFORMANCE WITH THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES"
6. WHEN SIGN IS IN PLACE, NO PART OF THE POST SHALL EXTEND ABOVE SIGN.

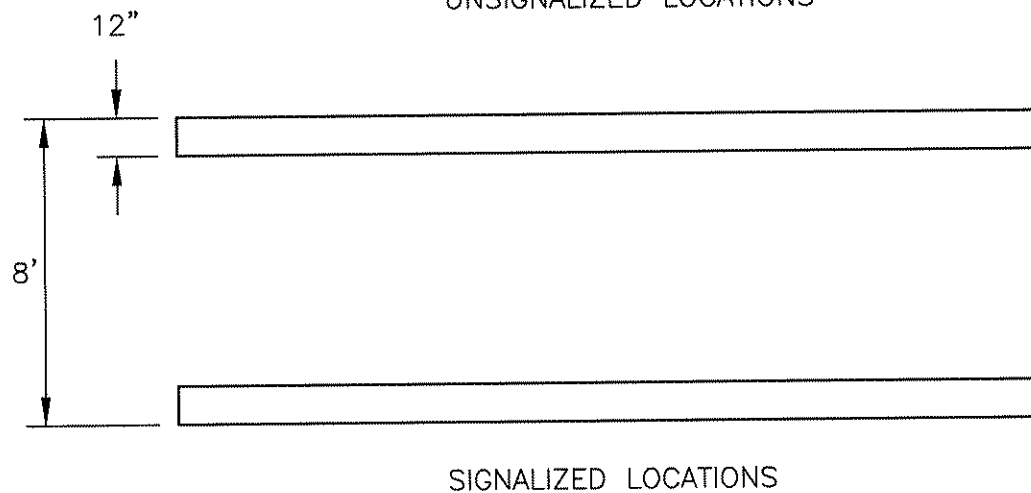
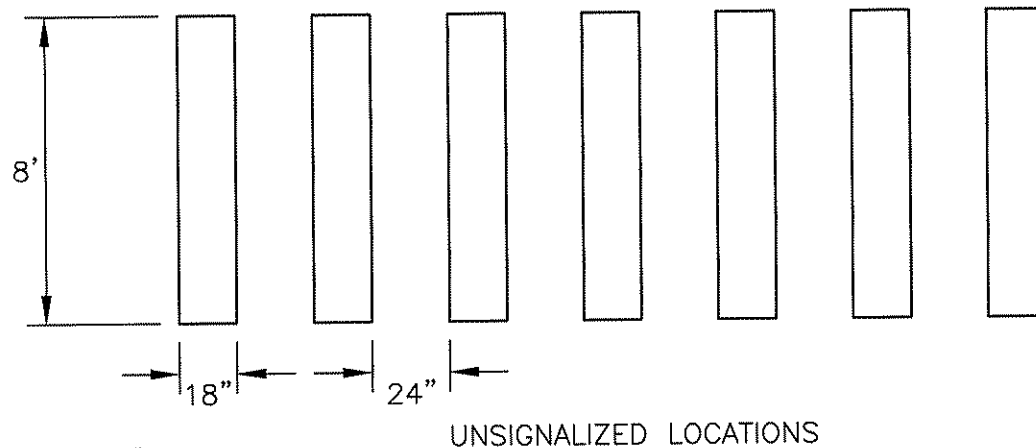
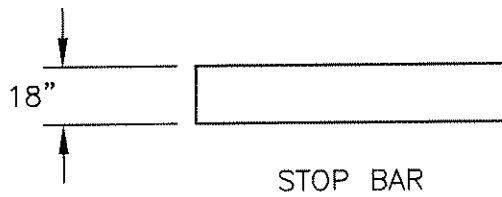


GREEN ENAMEL, 3# / FT  
FLANGED CHANNEL STEEL  
POST

PVC OR STEEL SLEEVE  
REQUIRED IN PAVED OR  
CONCRETE LOCATIONS

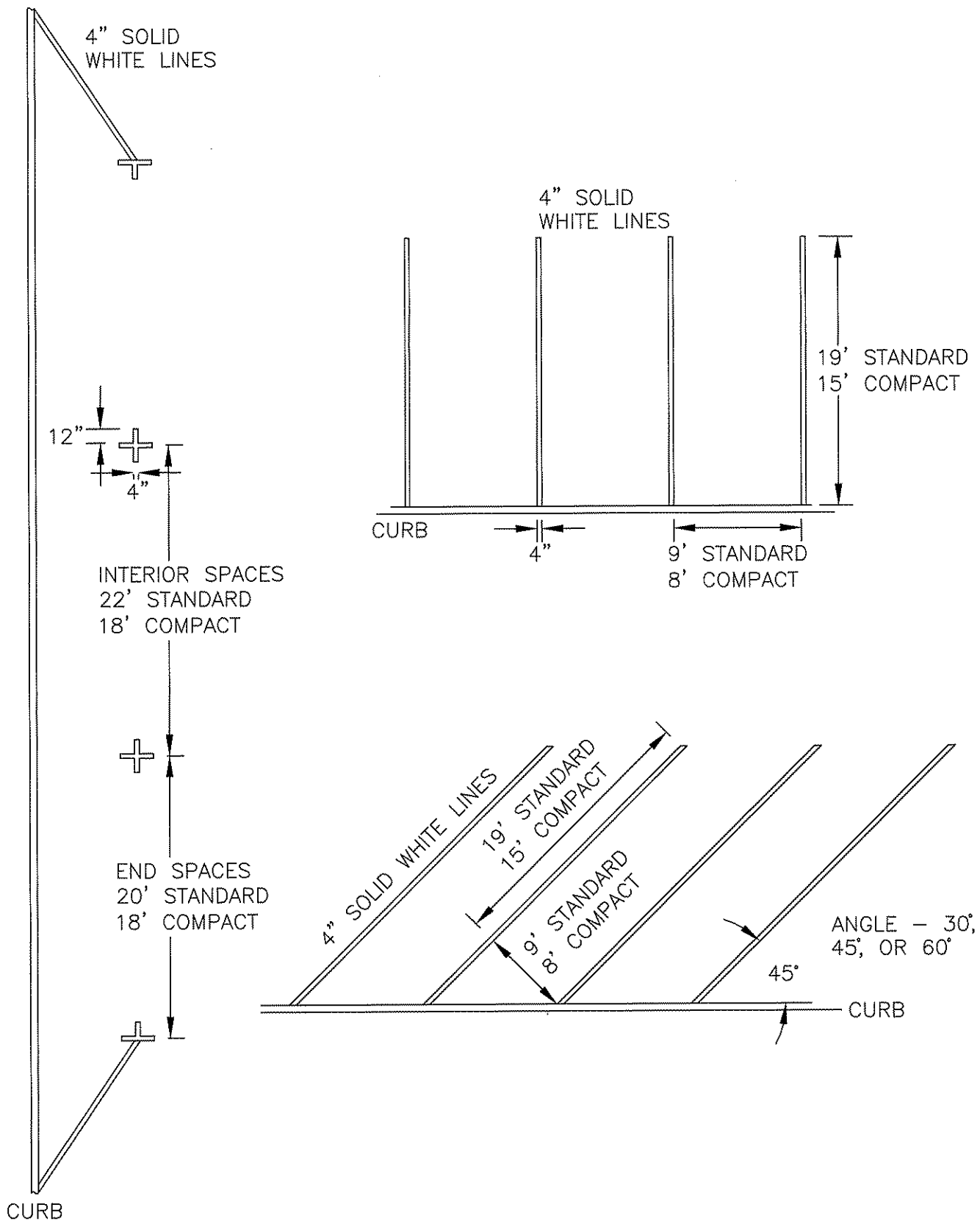
SLEEVE WILL BE LARGE  
ENOUGH TO ALLOW FOR  
REPLACEMENT POST

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	<b>ROAD SIGN POST and SLEEVE - RURAL</b>	DRAWING NO. M-2
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

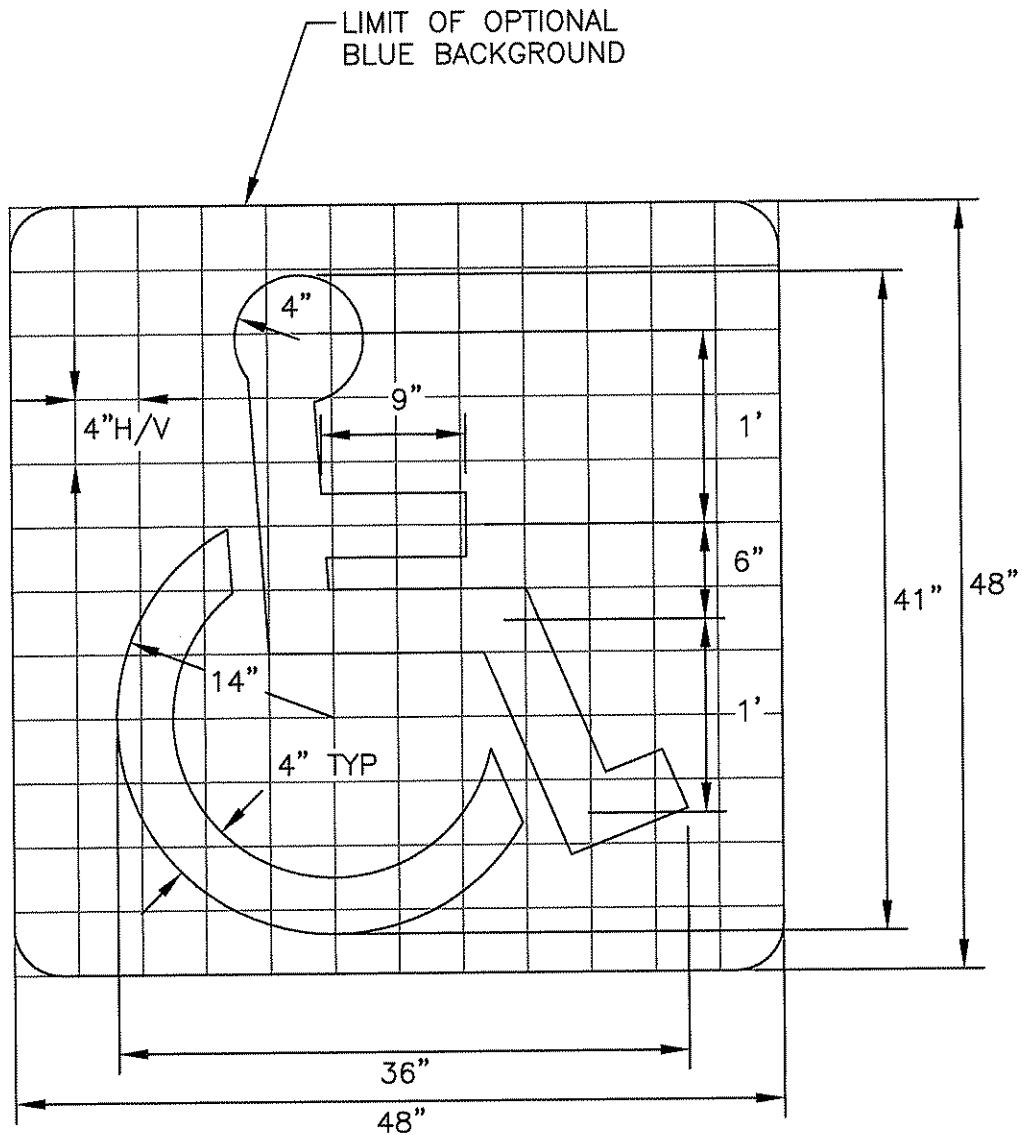


CROSSWALKS AND STOP BARS SHALL BE WHITE THERMOPLASTIC

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	PAVEMENT MARKINGS	DRAWING NO. M-3
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



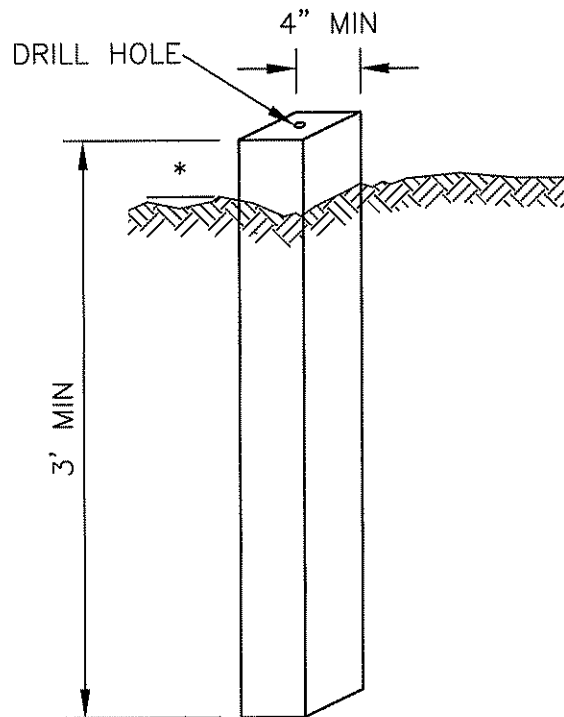
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	PARKING SPACE LAYOUT	DRAWING NO. M-4
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



SYMBOL SHALL BE WHITE WITH AN  
OPTIONAL BLUE BACKGROUND

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE/STREET
-	-	-	<b>ACCESSIBLE PARKING SPACE PAVEMENT MARKING</b>	DRAWING NO.	M-5
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					





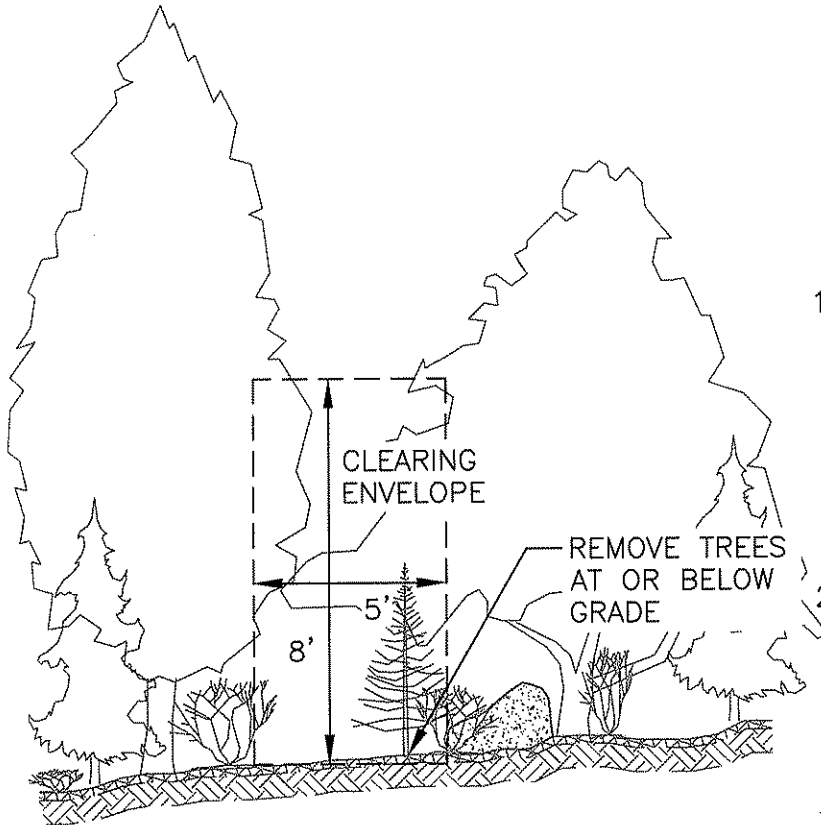
BOUND TO BE VERTICAL AND SOIL COMPACTED WHEN SET

NOTES:

1. RIGHT-OF-WAY BOUNDS SHALL BE REINFORCED CONCRETE OR GRANITE, 4"x4"x3' MINIMUM IN SIZE.
2. RIGHT-OF-WAY BOUNDS SHALL BE INSPECTED BY THE CITY OF CONCORD ENGINEERING SERVICES DIVISION.

\* RIGHT-OF WAY BOUNDS SHALL BE SET  $\frac{5}{8}$ " TO 1" ABOVE GROUND IN RESIDENTIAL AREAS, 4" TO 6" ABOVE GROUND IN WOODED AREAS AND SLIGHTLY BELOW GRADE WHEN SET IN PAVEMENT.

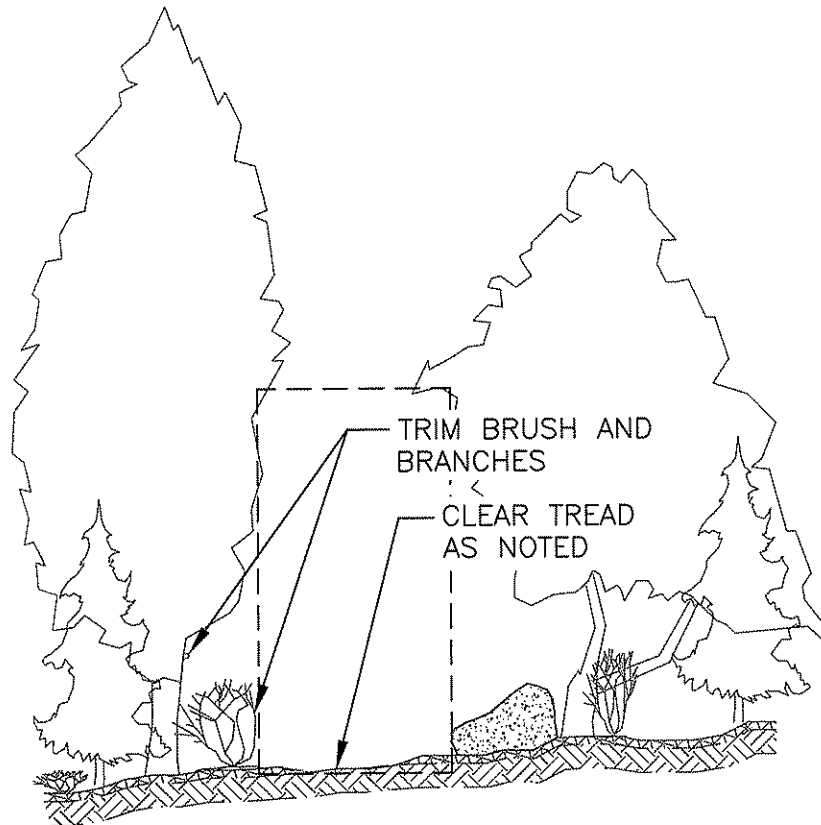
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET	
—	—	—	RIGHT—OF—WAY BOUND DETAIL	DRAWING NO.	M—6
—	—	—		DATE: 12/08	PAGE: 1
—	—	—			
APPROVED BY:					



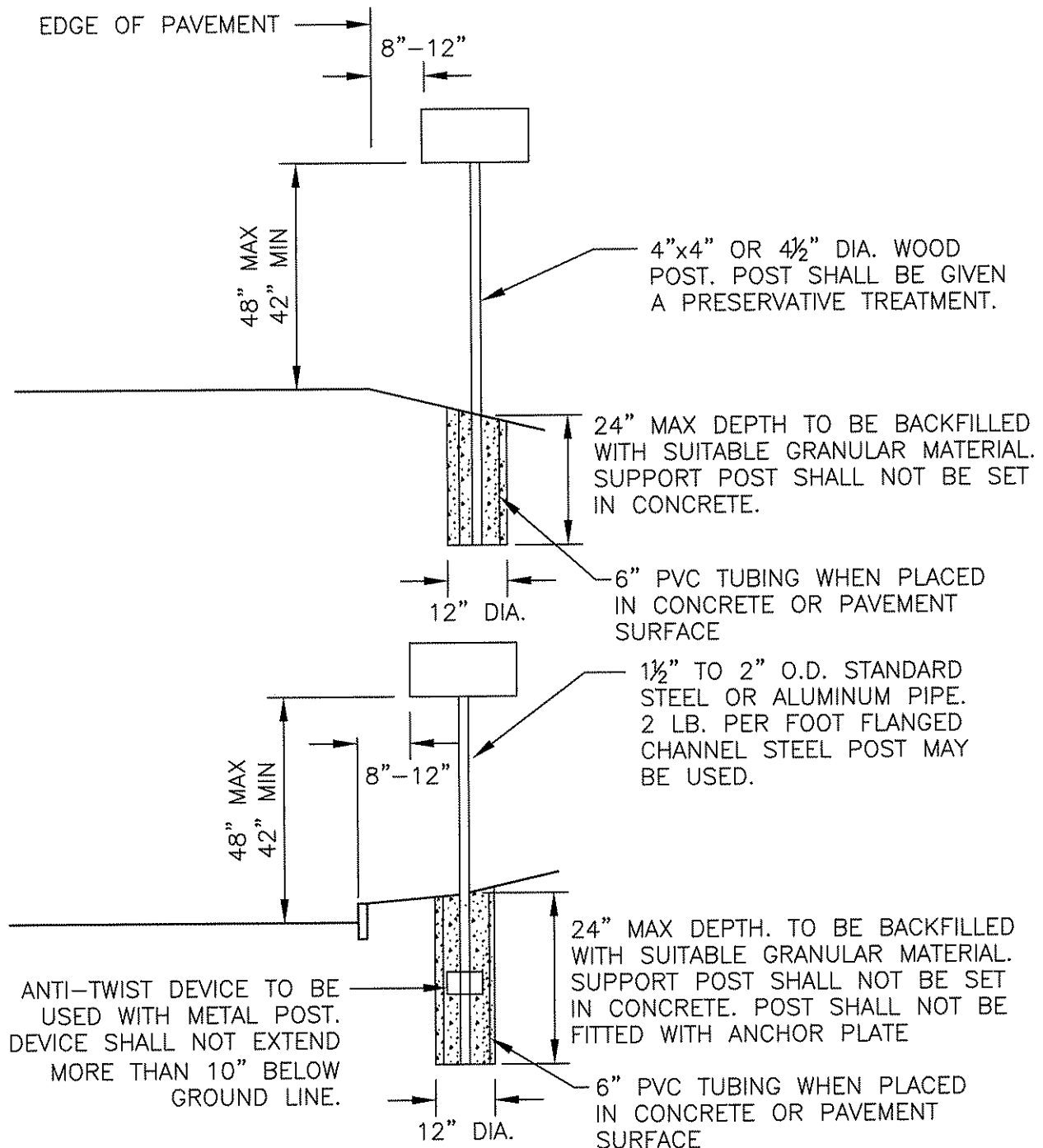
1. CLEARING FOR THE TRAIL SHOULD BE 5' WIDE AND 8' HIGH. CUT LIMBS FLUSH TO THE TREE TRUNK. CUT SMALL TREES BLOCKING THE PATH AT OR BELOW THE GROUND. REMOVE ALL CUTTING WELL OFF THE TRAIL.

2. A 3' WIDE TREAD SHALL BE ESTABLISHED. THE TREAD SHALL BE FREE OF ANY LOOSE STONES, DOWNED BRANCHES, VEGETATION AND LEAF LITTER.

3. TRAILS SHALL BE MARKED WITH 2½" BY 6" PAINTED BLAZES. BLAZES SHOULD BE PAINTED IN ORANGE, RED OR YELLOW PAINT. DO NOT USE WHITE, GREEN, OR GRAY PAINT. BLAZES SHOULD BE PLACED AS HIGH AS POSSIBLE. EACH BLAZE SHOULD BE VISIBLE FROM THE NEXT.



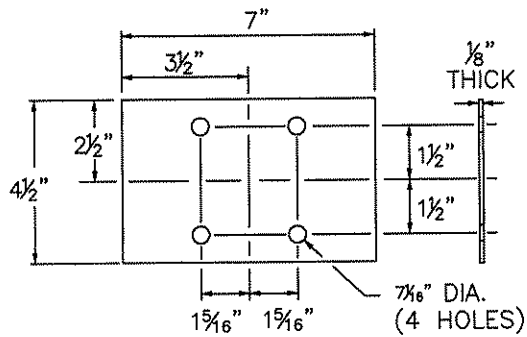
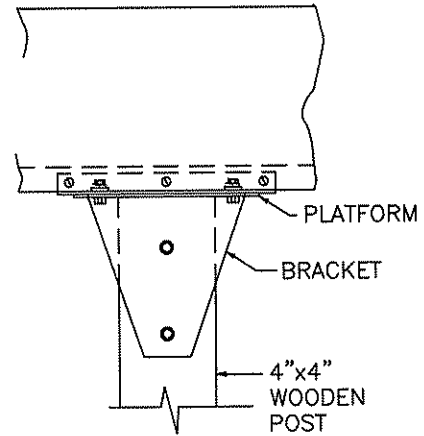
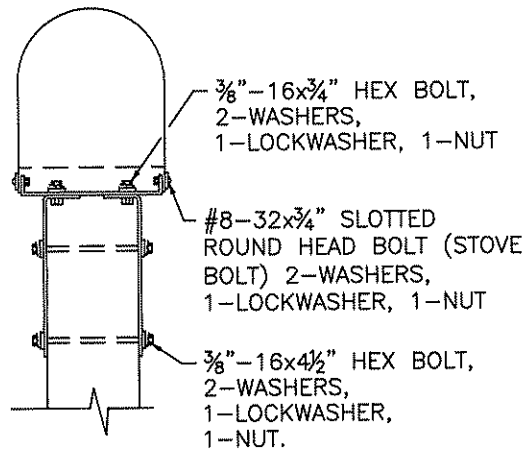
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE
-	-	-	<h1>TRAIL CONSTRUCTION</h1>	DRAWING NO.	M-7
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



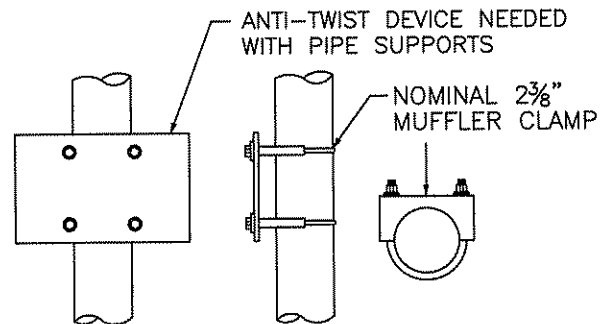
#### NOTES

1. ONLY LIGHTWEIGHT MAILBOXES MADE OF LIGHT SHEET METAL OR PLASTIC SHALL BE USED. MAILBOXES SHALL MEET REQUIREMENTS AND APPROVAL OF THE U.S. POSTAL SERVICE.
2. AN ALTERNATE MAILBOX SUPPORT STRUCTURE DESIGN AND CONSTRUCTION MAY BE USED AS LONG AS PROVEN CRASHWORTHY AND MEETS GUIDELINES AS SET OUT IN AASHTO'S "GUIDE FOR ERECTING MAILBOXES ON HIGHWAYS". SUPPORT STRUCTURE SHALL ALSO MEET REQUIREMENTS OF THE U.S. POSTAL SERVICE. GRANITE POSTS SHOULD NOT BE USED. GRANITE OR OTHER DECORATIVE POSTS DAMAGED BY CITY STAFF DURING WINTER MAINTENANCE OPERATIONS WILL BE REPLACED WITH A 4"x4" WOOD POST.

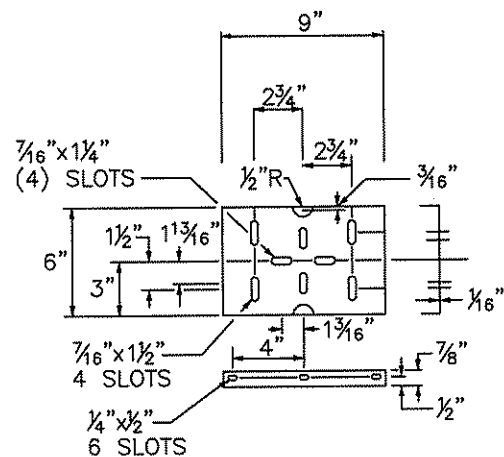
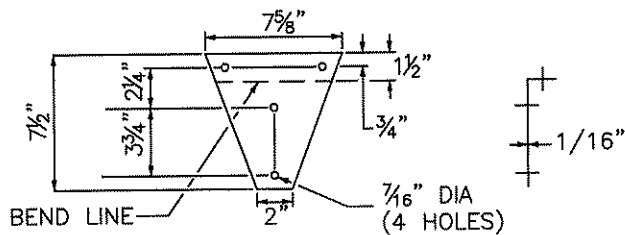
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	<b>MAILBOX SUPPORT</b>	DRAWING NO. M-8
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



ANTI-TWIST DEVICE  
DETAIL FOR METAL  
PIPE



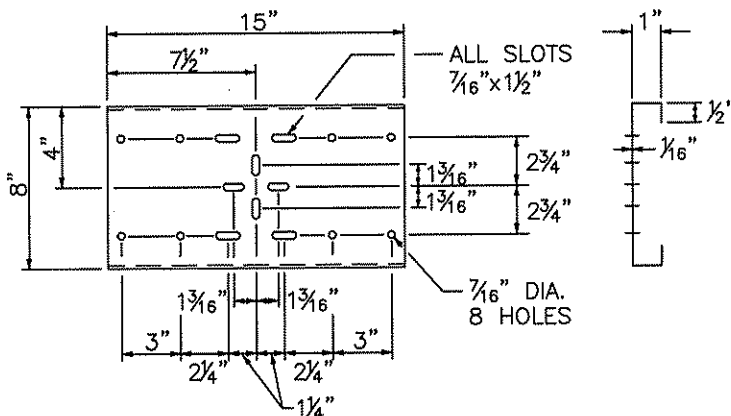
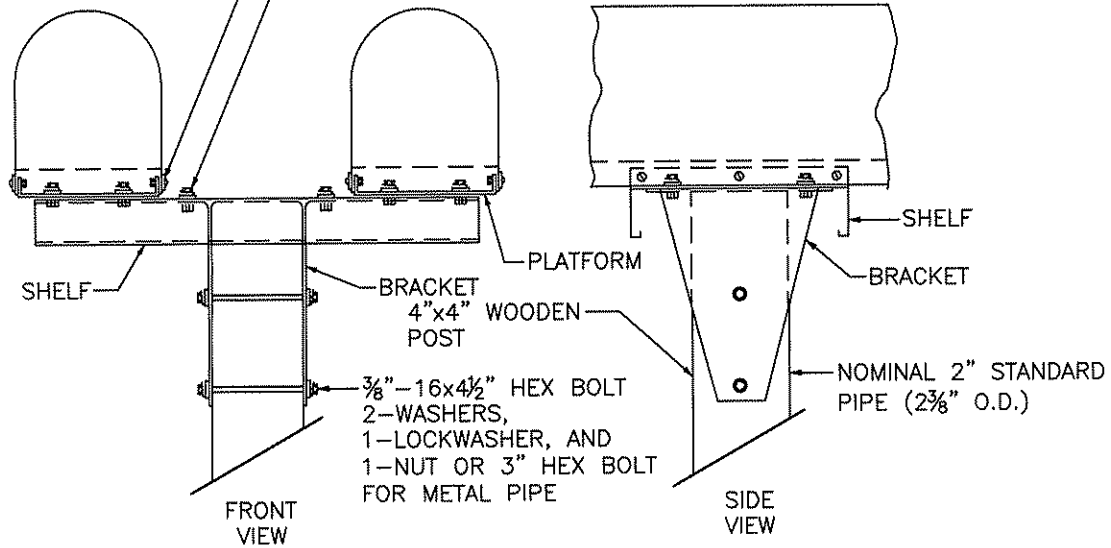
ANTI-TWIST DEVICE ASSEMBLY FOR METAL PIPES  
(USED FOR SINGLE AND MULTIPLE INSTALLATIONS )



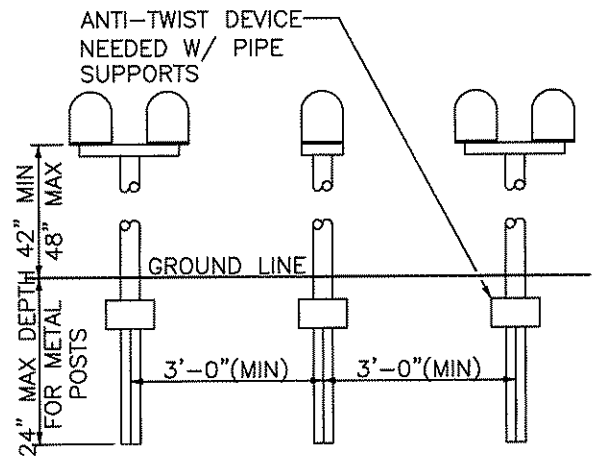
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	SINGLE MAILBOX SUPPORT	DRAWING NO. M-9
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

#8-32x $\frac{3}{4}$ " SLOTTED RD. HD. BOLT (STOVE BOLT)  
2-WASHERS, 1-LOCKWASHER, AND 1-NUT

$\frac{3}{8}$ "-16x4 $\frac{1}{2}$ " HEX BOLT 2-WASHERS,  
1-LOCKWASHER, AND 1-NUT



SHELF FOR TWO BOXES



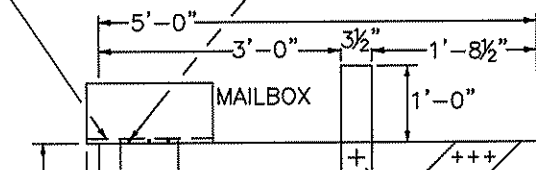
SPACING FOR MULTIPLE  
POST INSTALLATION

(APPLIES TO BOTH SINGLE AND  
MULTIPLE MAILBOX SUPPORTS)

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	MULTIPLE MAILBOX SUPPORT	DRAWING NO. M-10
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

1"x6"x17" BOARD BOLTED TO  
SUPPORT W/ 2-1/4"x5"  
BOLTS, NUTS & WASHERS

ATTACH BOX TO BOARD  
W/ 3 10x1" SHEET MTL.  
SCREWS EACH SIDE



42" TO 48"

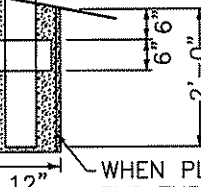
4"x4" TREATED  
WOOD SUPPORT  
3 - 8d GALVANIZED  
NAILS EACH END  
BOTH SIDES

4"x4" TREATED  
WOOD POST

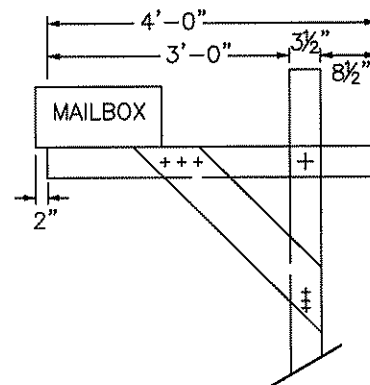
GROUND LINE

ANTI-TWIST DEVICE  
1-2"x6"x10"  
TREATED BOARD,  
2-16d GALVANIZED NAILS

CRUSHED STONE

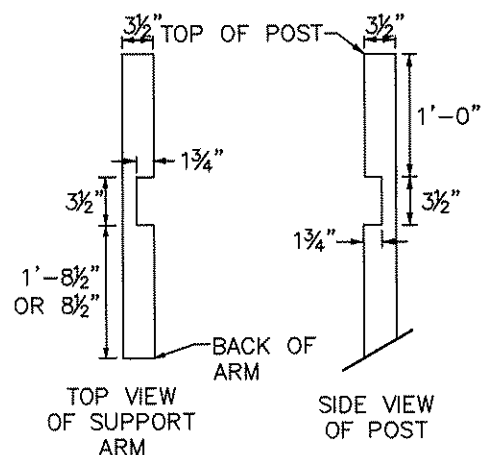


WHEN PLACED 6"  
PVC TUBING IN  
CONCRETE OR  
PAVEMENT



OPTIONAL BRACE DESIGN

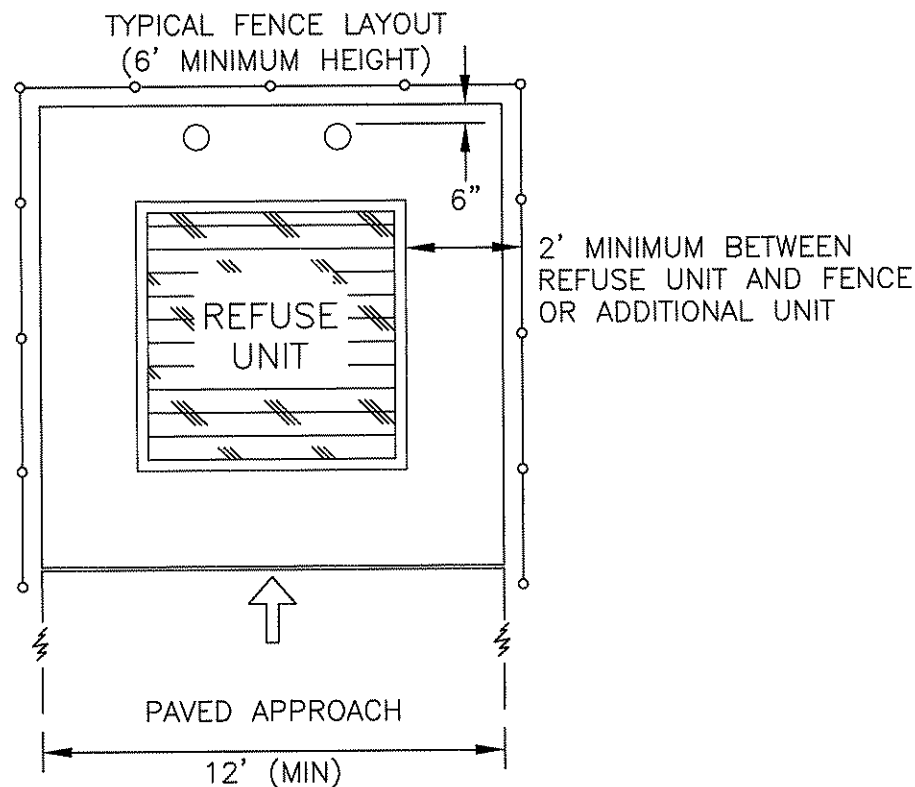
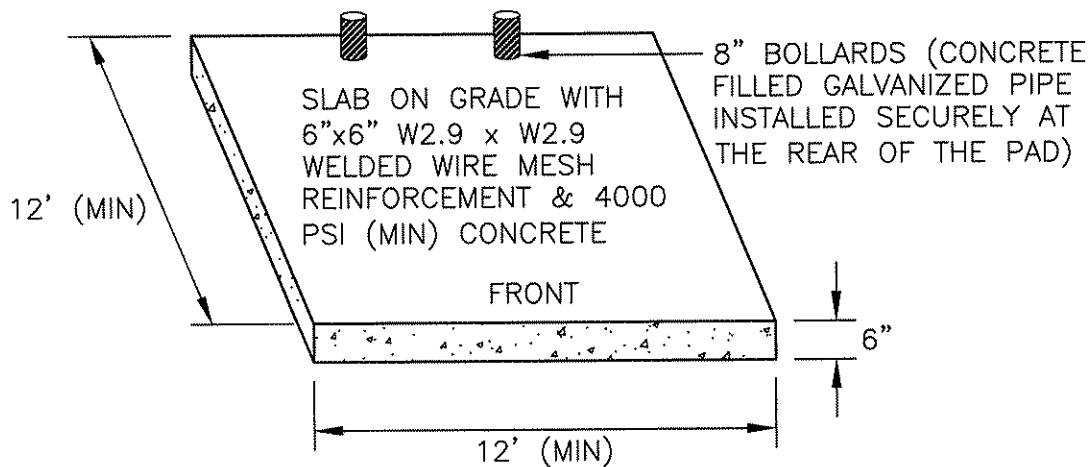
TREATED WOOD BRACES  
(2) 1"x6"x2'-6"  
HALF LAP NOTCHED  
JOINT W/ 3/8"x4 1/2" BOLT  
W/ NUT & 2 WASHERS



TOP VIEW  
OF SUPPORT  
ARM

SIDE VIEW  
OF POST

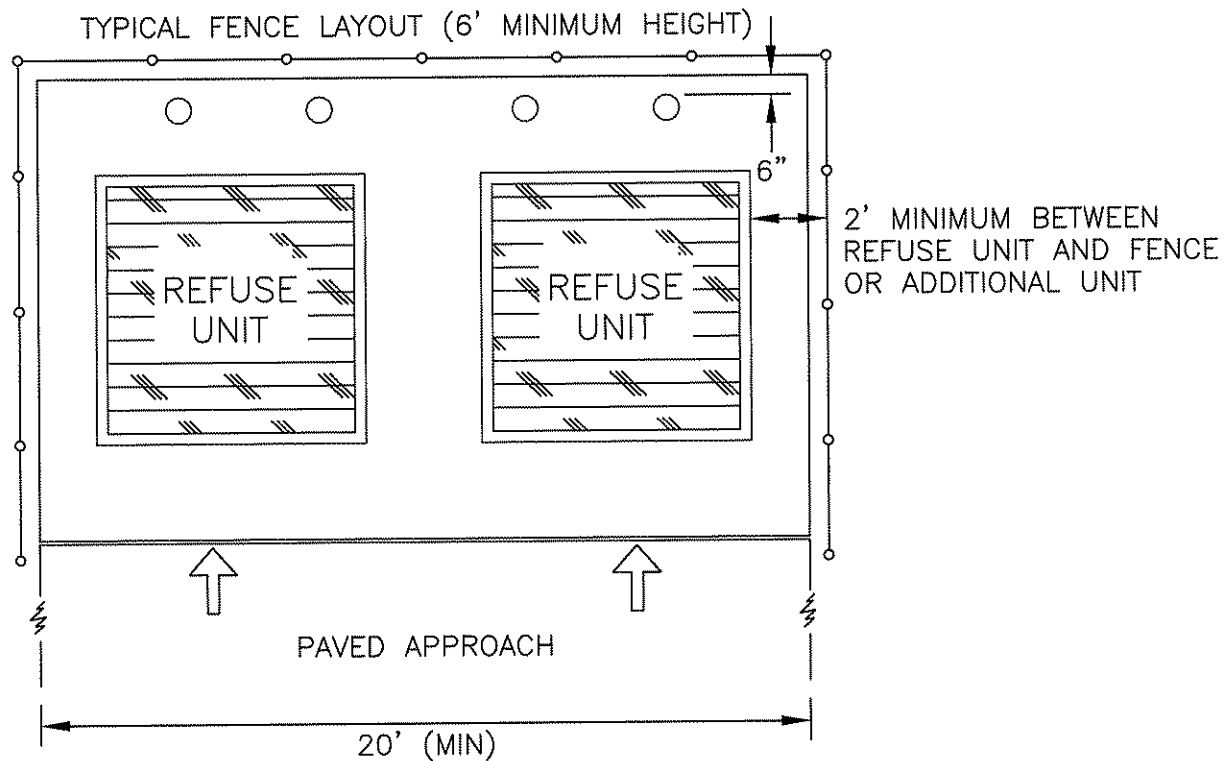
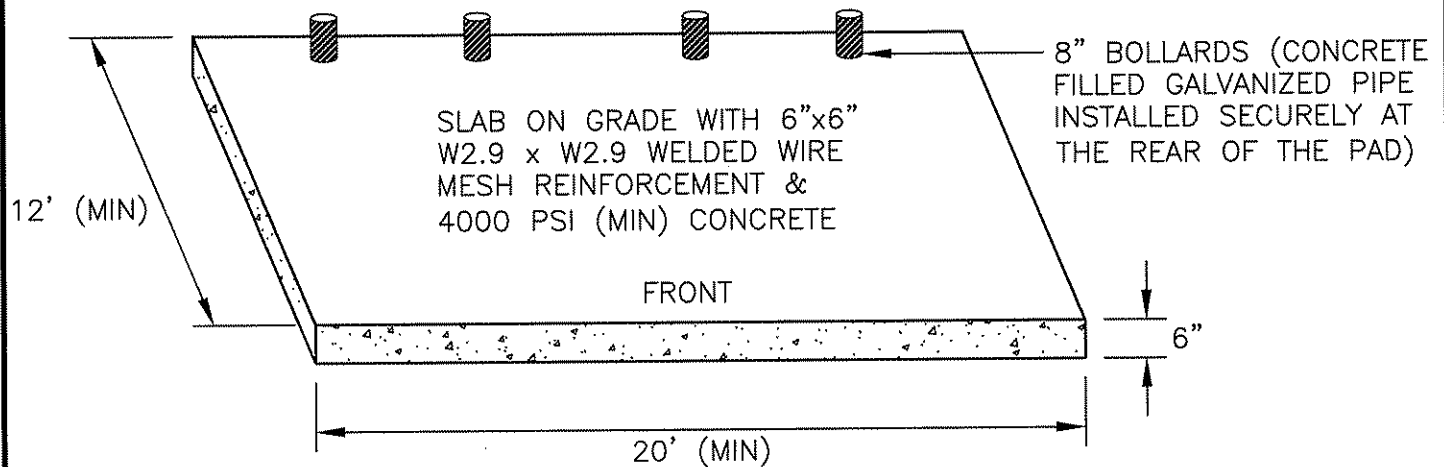
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	<b>CANTILEVER TYPE MAILBOX SINGLE SUPPORT</b>	DRAWING NO. M-11
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



NOTES:

1. DUMPSTER PADS AND ASSOCIATED SCREENING SHALL BE PLACED WHERE THE REFUSE BINS CAN BE UNLOADED WITH A SINGLE TURNING MOVEMENT WITH A 35' FRONT LOADING TRUCK. THE WIDTH OF THE GATE SHOULD BE TAKEN INTO ACCOUNT WHEN REVIEWING TURNING MOVEMENTS.
2. TRASH CONTAINERS SHALL BE LOCATED A MINIMUM DISTANCE OF 25' FROM ANY DRAINAGE STRUCTURE, INLET OR STORMWATER FACILITY.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE
-	-	-	<b>SINGLE DUMPSTER PAD</b>	DRAWING NO.	M-12
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					

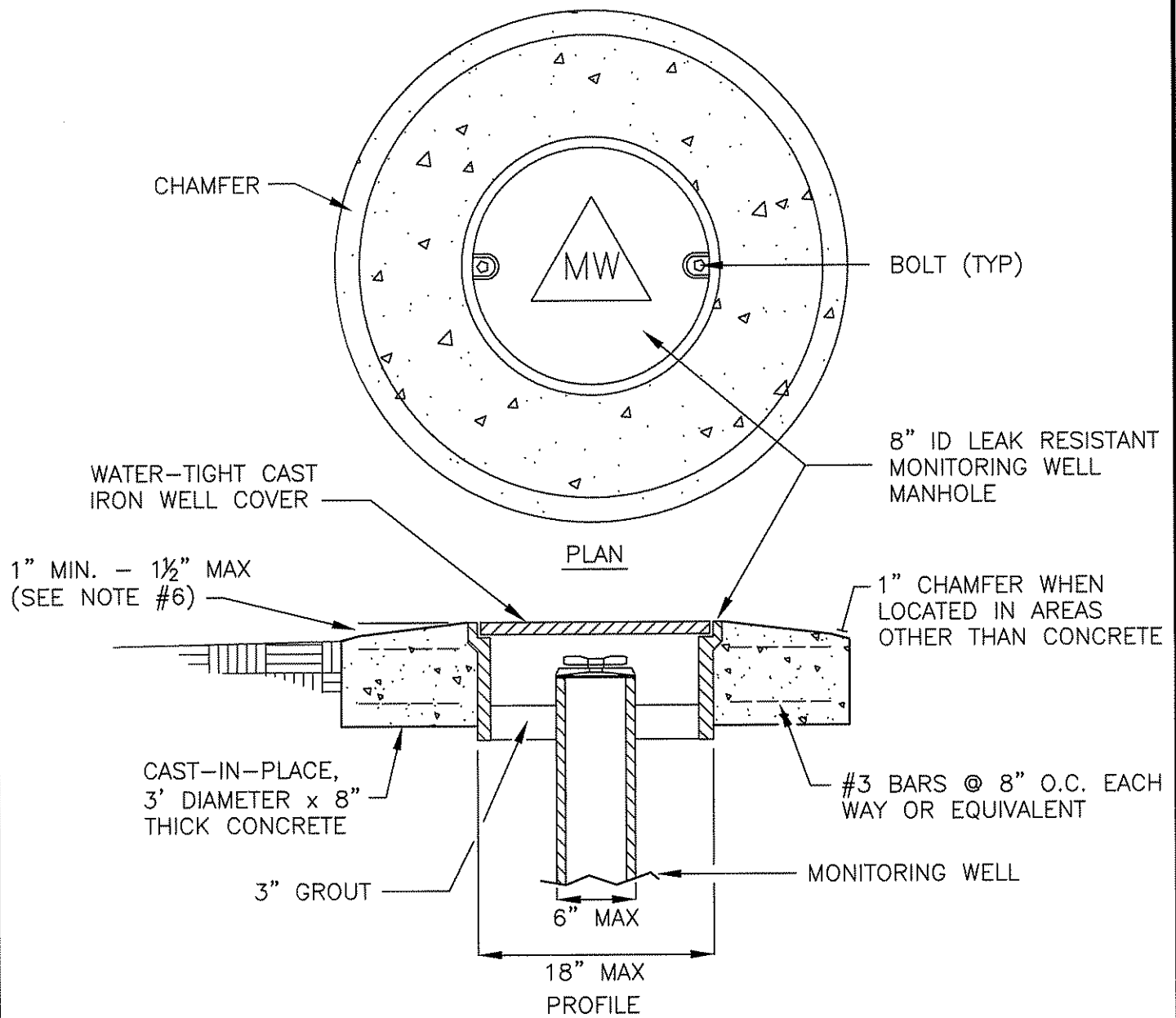


**NOTES:**

1. DUMPSTER PADS AND ASSOCIATED SCREENING SHALL BE PLACED WHERE THE REFUSE BINS CAN BE UNLOADED WITH A SINGLE TURNING MOVEMENT WITH A 35' FRONT LOADING TRUCK. THE WIDTH OF THE GATE SHOULD BE TAKEN INTO ACCOUNT WHEN REVIEWING TURNING MOVEMENTS.
2. TRASH CONTAINERS SHALL BE LOCATED A MINIMUM DISTANCE OF 25' FROM ANY DRAINAGE STRUCTURE, INLET OR STORMWATER FACILITY.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE
-	-	-	<b>MULTIPLE DUMPSTER PAD</b>	DRAWING NO.	M-13
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					

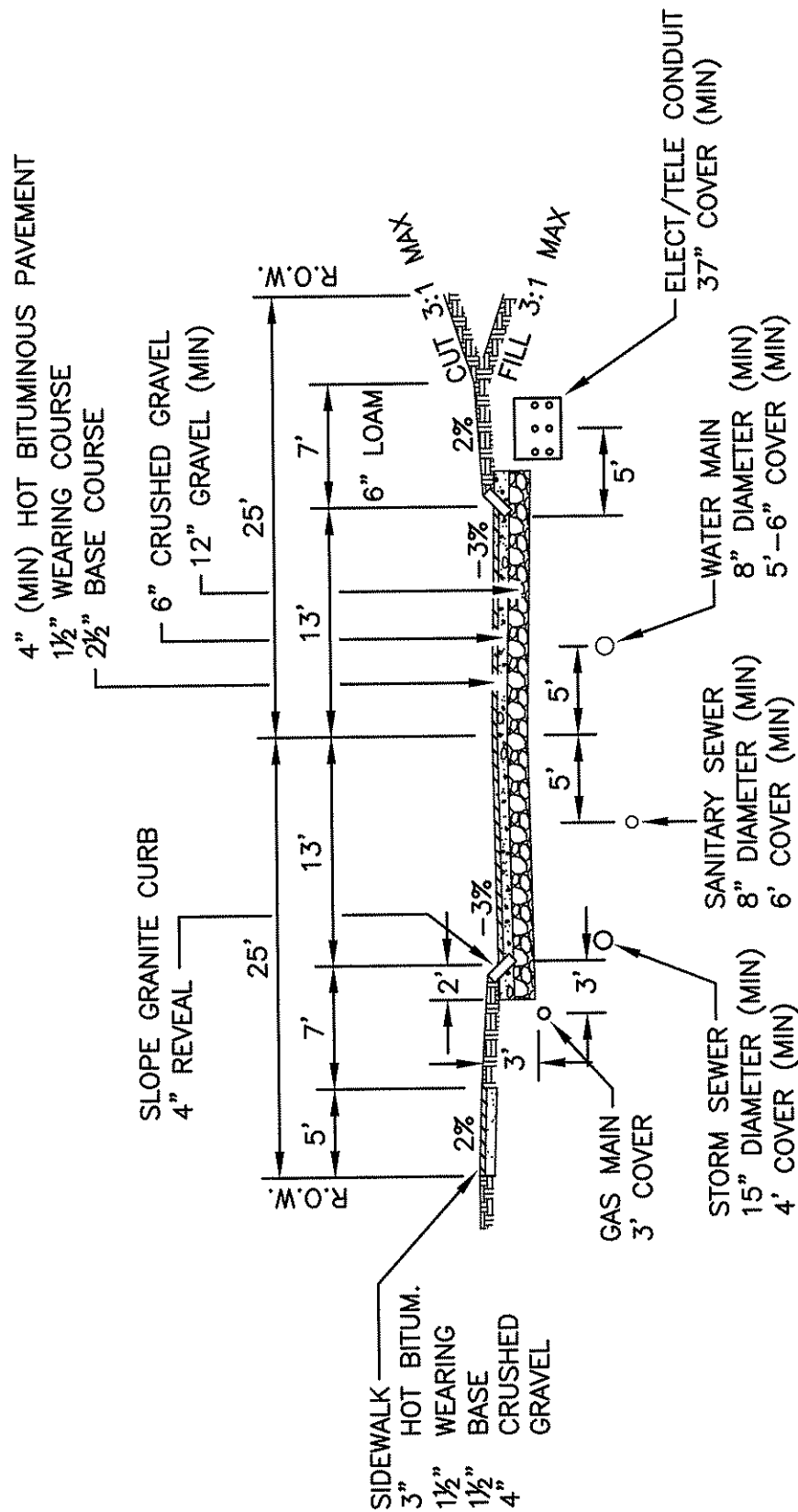




**NOTES:**

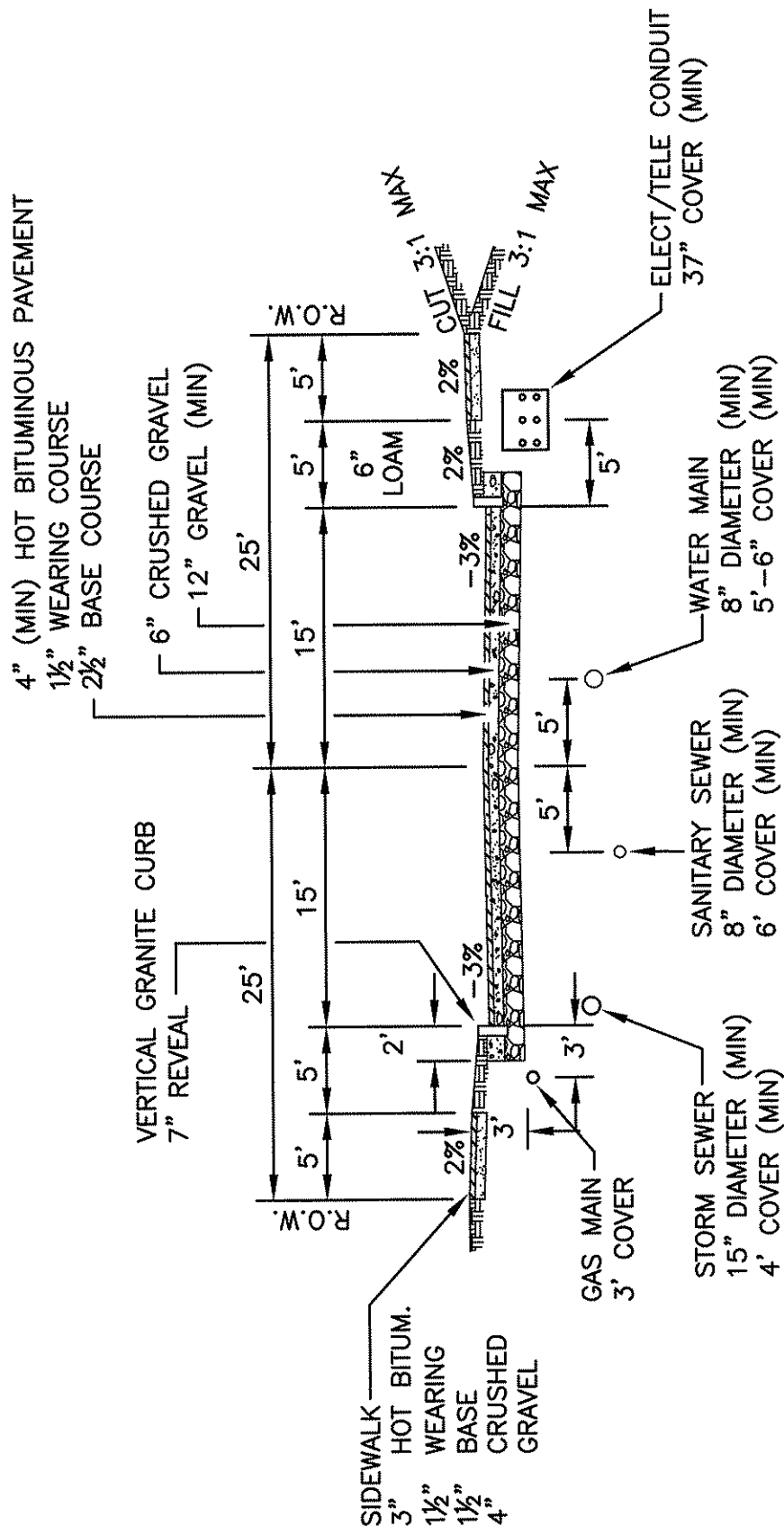
1. NO LESS THAN 12" OF HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN THE MONITORING WELL AND ANY EXISTING UNDERGROUND UTILITY.
2. THE WELL BOX SHALL BE STRUCTURALLY SOUND AND STRONG ENOUGH TO SUPPORT VEHICULAR TRAFFIC. IT SHALL BE TRAFFIC RATED AS TESTED BY AN OFFICIAL TESTING LABORATORY TO MEET AASHTO STANDARD FOR "H-20" TRUCK LOADINGS.
3. THE TOP OF THE WELL SHALL BE PERMANENTLY MARKED WITH LARGE LETTERS "MW"
4. THE WELL COVER SHALL BE BOLTED DOWN OR EQUIVALENT TO PROVIDE PROTECTION AGAINST UNAUTHORIZED ACCESS.
5. THE WELL COVER SHALL BE WATER-TIGHT TO PROTECT AGAINST ENTRY OF SURFACE WATER.
6. THE TOP OF THE WELL SHALL BE SET 1" TO 1½" ABOVE SURROUNDING GRADE TO PROVIDE FOR DRAINAGE AWAY FROM THE COVER, EXCEPT FOR WELLS INSTALLED IN SIDEWALK OR PAVED AREAS WHERE TOP OF THE CONCRETE PAD SHALL BE INSTALLED FLUSH AND MATCH EXISTING CONDITIONS.
7. A CONCRETE PAD WITH A MINIMUM THICKNESS OF 6" SHALL BE CONSTRUCTED AROUND THE WELL BOX. THE PAD SHALL EXTEND Laterally A MINIMUM OF 12" FROM OUTSIDE OF THE WELL BOX. THE PAD SHALL BE CONSTRUCTED TO BE FREE OF CRACKS OR OTHER DEFECTS LIKELY TO AFFECT WATER TIGHTNESS.
8. A LOCKING WATERTIGHT WELL CAP SHALL BE INSTALLED AT THE TOP OF THE WELL CASING SO THAT SURFACE WATER THAT MAY ENTER THE VAULT WILL NOT ENTER THE WELL.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE	
-	-	-	MONITORING WELL CONSTRUCTION DETAIL	DRAWING NO.	M-14
-	-	-		DATE: 12/08	PAGE: 1
-	-	-			
APPROVED BY:					



HIGH OR MEDIUM DENSITY DISTRICTS  
 (LOT SIZE 40,000 S.F. OR MORE)

NO.	REVISION	DATE	City of Concord Engineering Services Division		SECTION: SITE/STREET	
-	-	-	<b>MINOR STREET</b> <b>Lot size 40,000 sf or more</b>		DRAWING NO.	R-1
-	-	-			DATE:	12/08
-	-	-			PAGE:	1
APPROVED BY:						

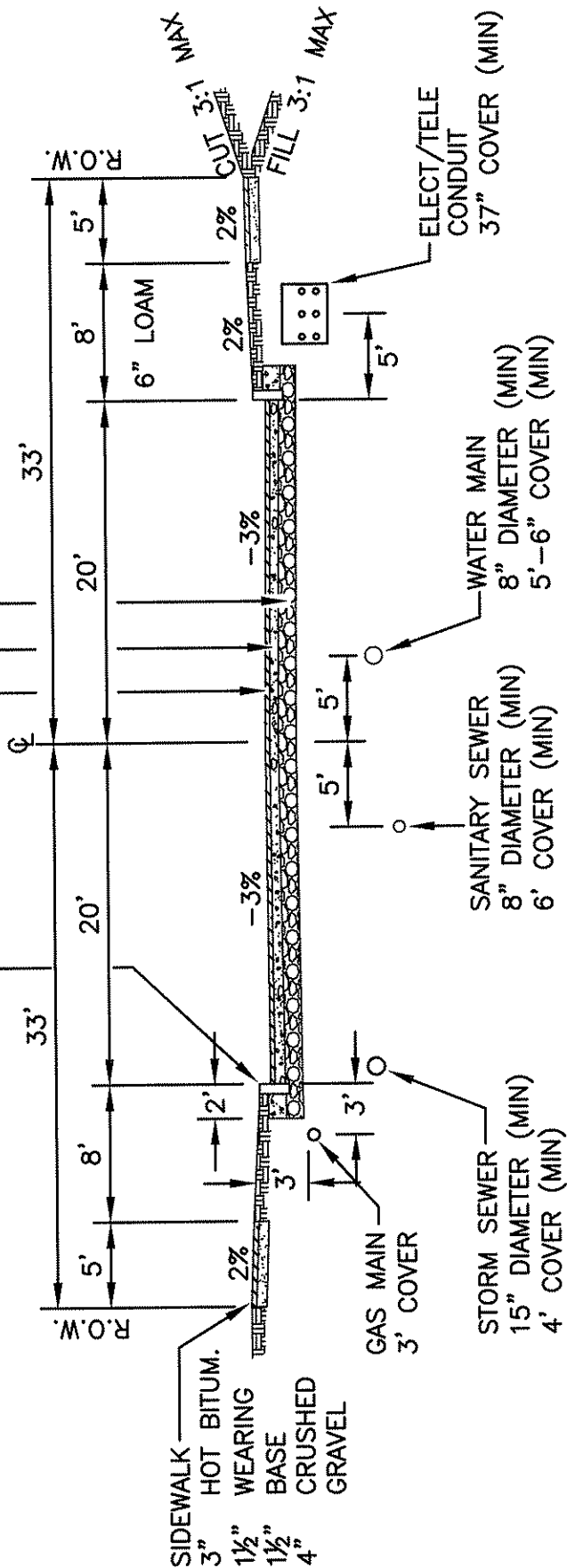


NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET	
-	-	-	<div style="text-align: center;"> <b>MINOR STREET</b>  <b>Lot size 40,000 sf or less</b> </div>	DRAWING NO. R-2	
-	-	-		DATE: 12/08	
-	-	-		PAGE: 1	
APPROVED BY:					

5"(MIN) HOT BITUMINOUS PAVEMENT  
1½" WEARING COURSE  
¾" BASE COURSE

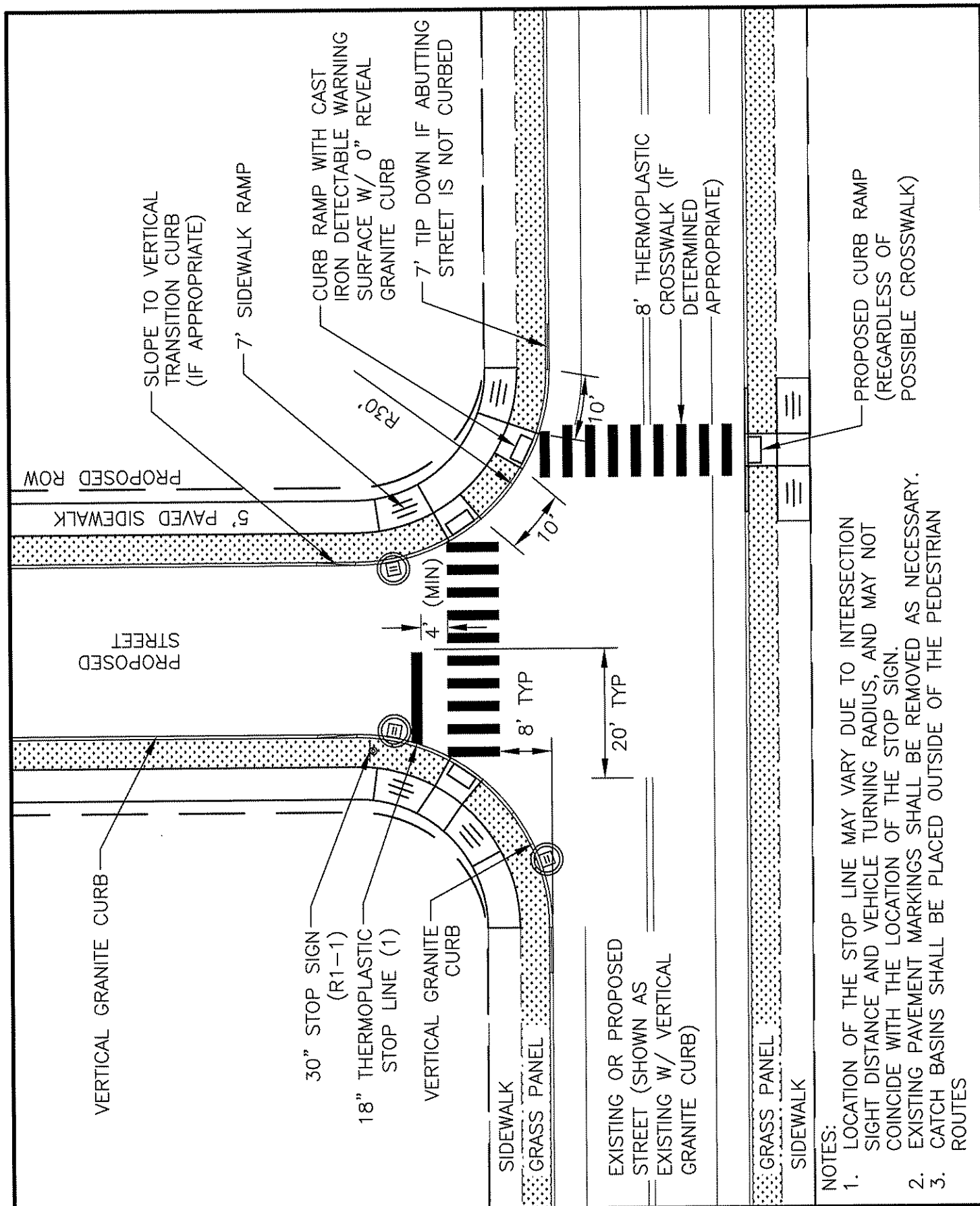
VERTICAL GRANITE CURB  
7" REVEAL

6" CRUSHED GRAVEL  
12" GRAVEL (MIN)

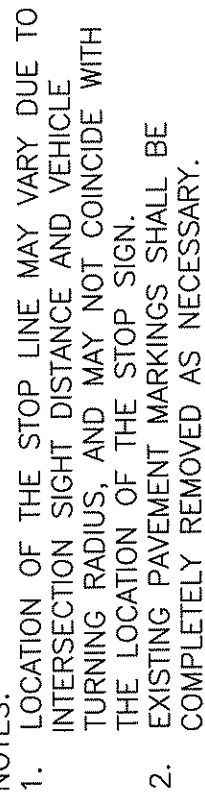


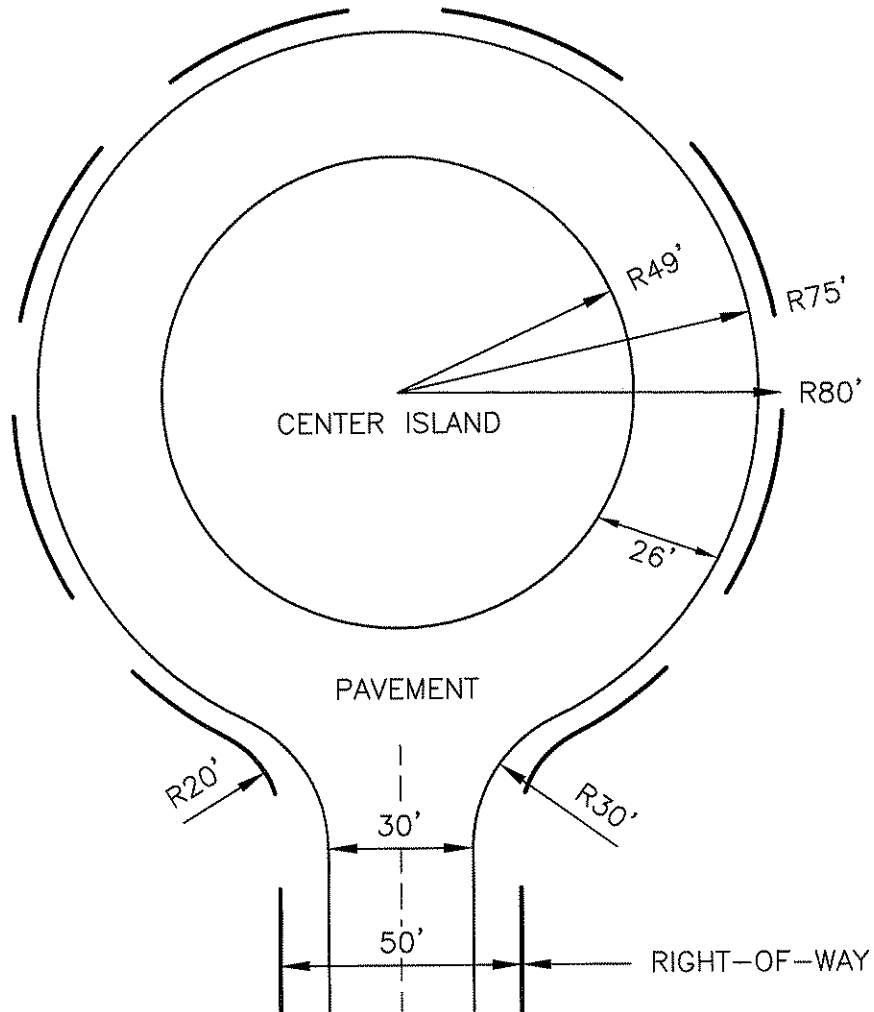
HIGH OR MEDIUM DENSITY DISTRICTS  
(LOT SIZE 40,000 S.F. OR LESS)

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	<b>COLLECTOR STREET</b>	DRAWING NO. R-3
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



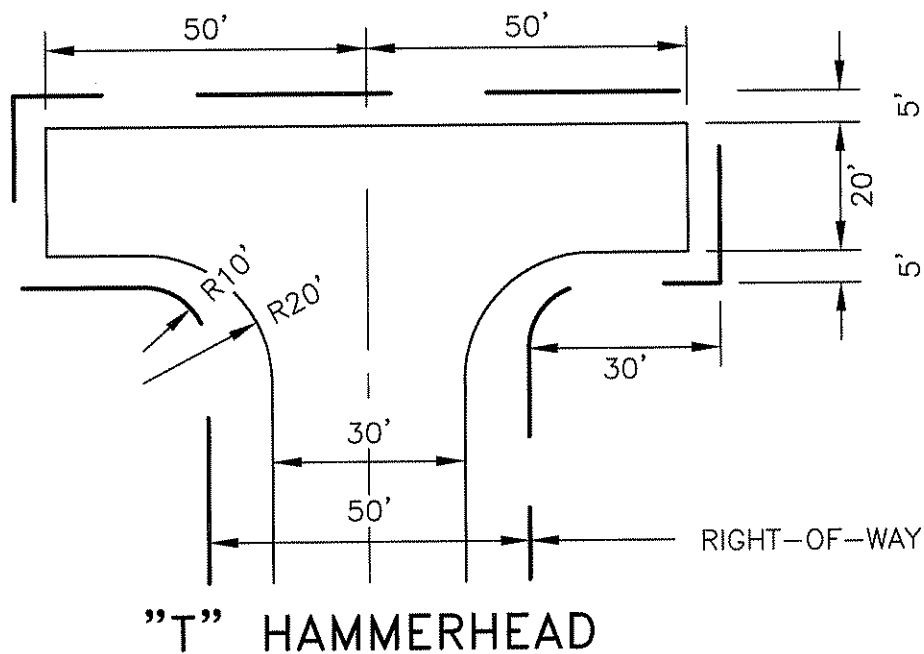
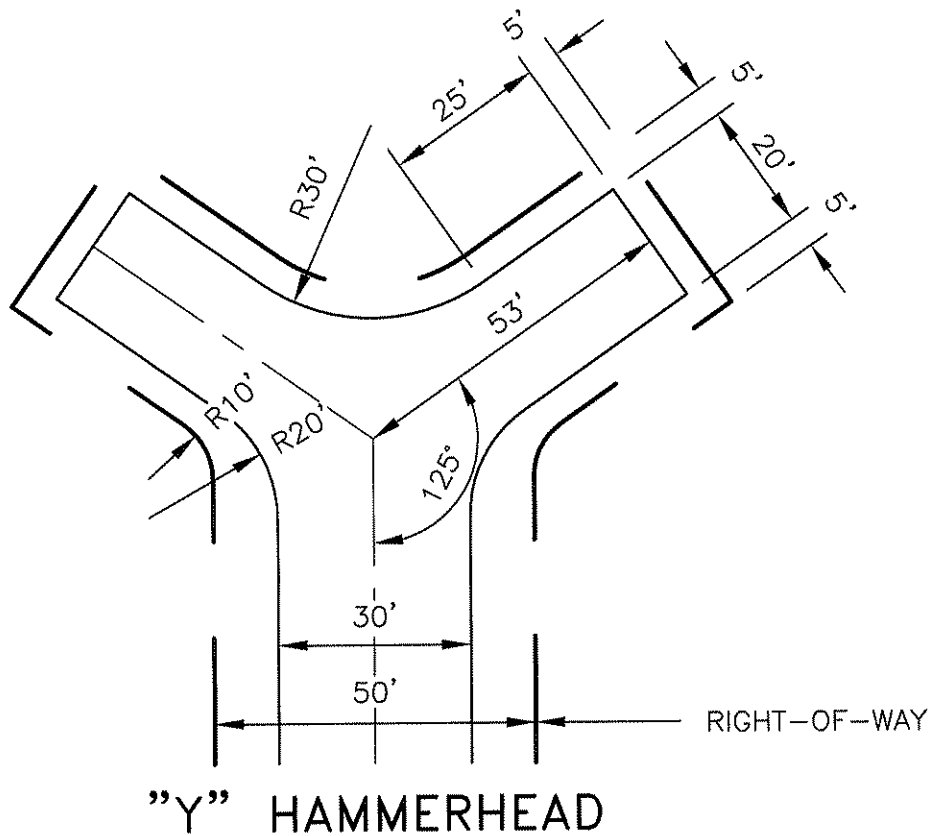
NO.	REVISION	DATE	City of Concord Engineering Services Division		SECTION: SITE/STREET	
-	-	-	URBAN INTERSECTION		DRAWING NO.	R-4
-	-	-			DATE:	12/08
-	-	-			PAGE:	1
APPROVED BY:						

RDWY-Intersections.dwg



CUL-DE-SAC

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	<b>ROADWAY TERMINATION CUL-DE-SAC</b>	DRAWING NO. R-6
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

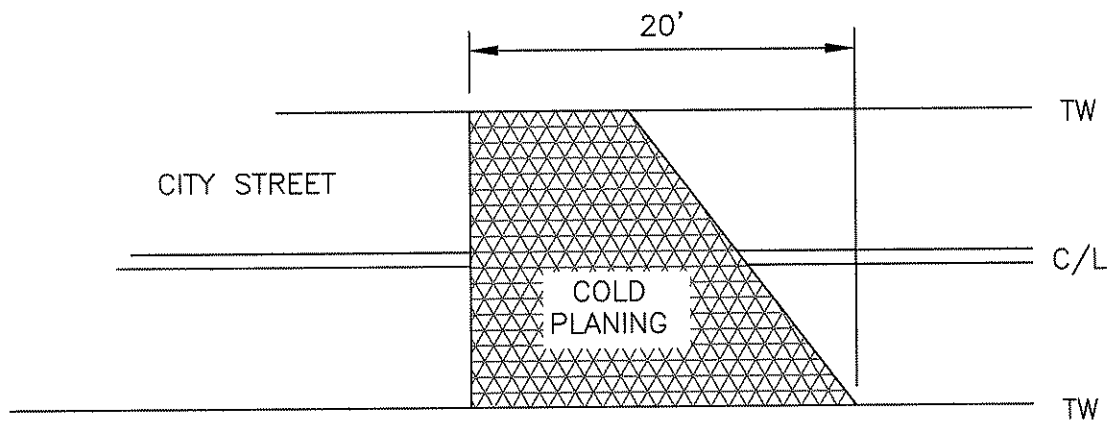


NOTE:

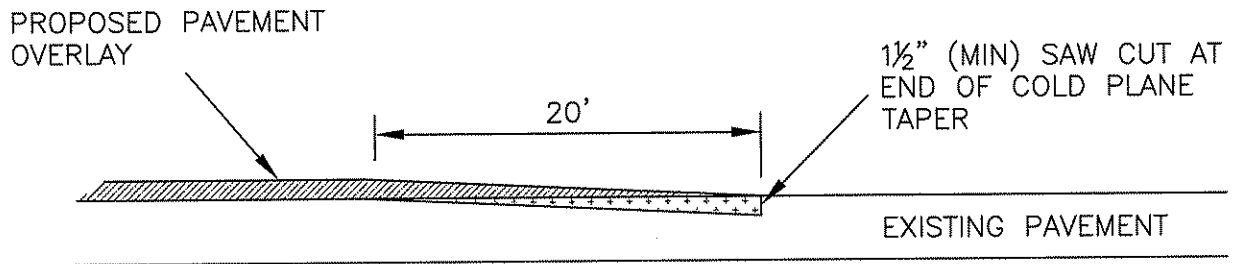
DRIVEWAYS SHOULD NOT BE LOCATED AT THE 20' WIDE ENDS OF THE HAMMERHEADS

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE/STREET
-	-	-	<b>TEMPORARY ROADWAY TERMINATION</b>	DRAWING NO.	R-7
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					





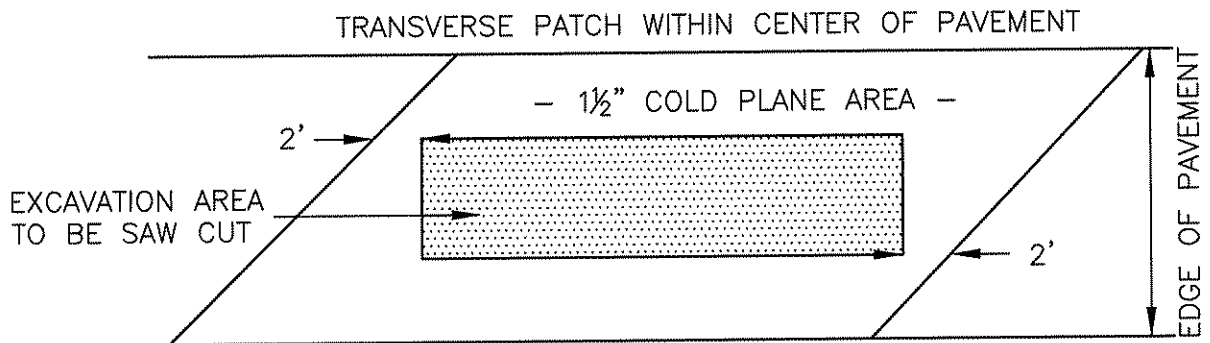
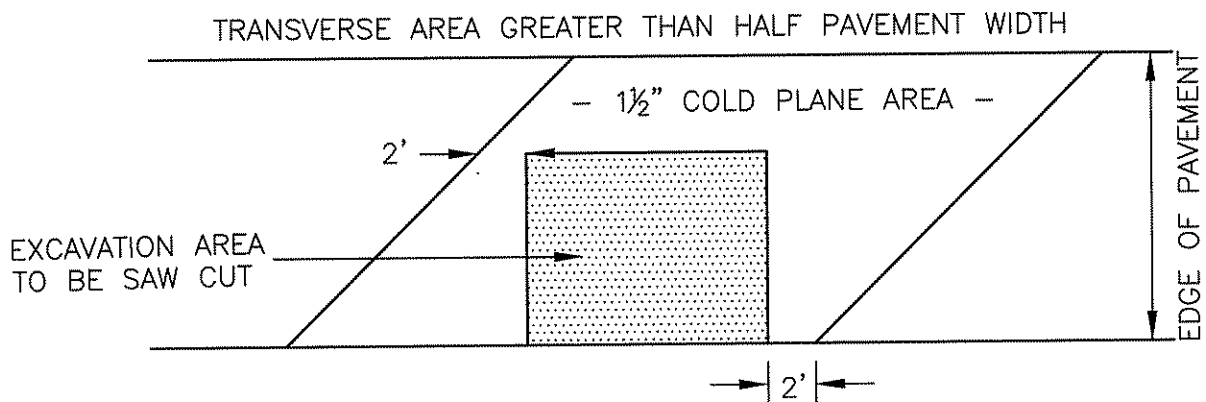
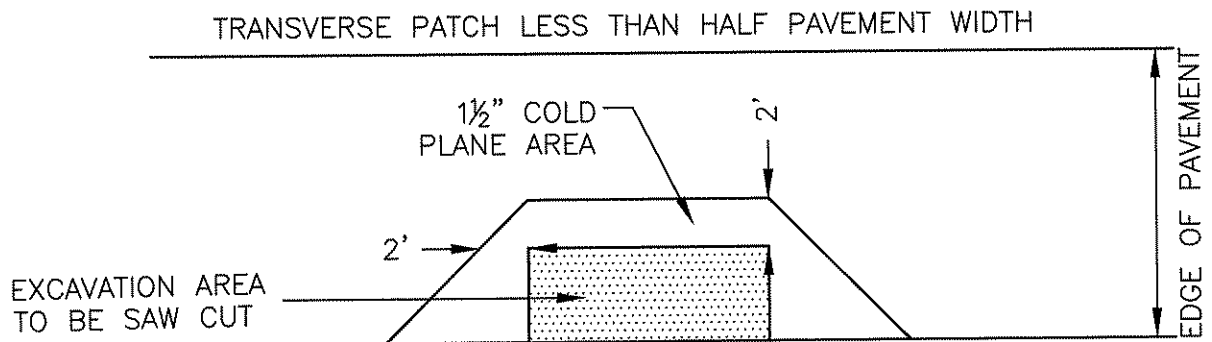
PLAN



EXISTING PAVEMENT SHALL BE COLD PLANED FOR A LENGTH OF 20' TAPERING FROM 0" TO 1½" MINIMUM DEPTH, THROUGHOUT THE ENTIRE WIDTH OF THE ROADWAY TO BE OVERLAID.

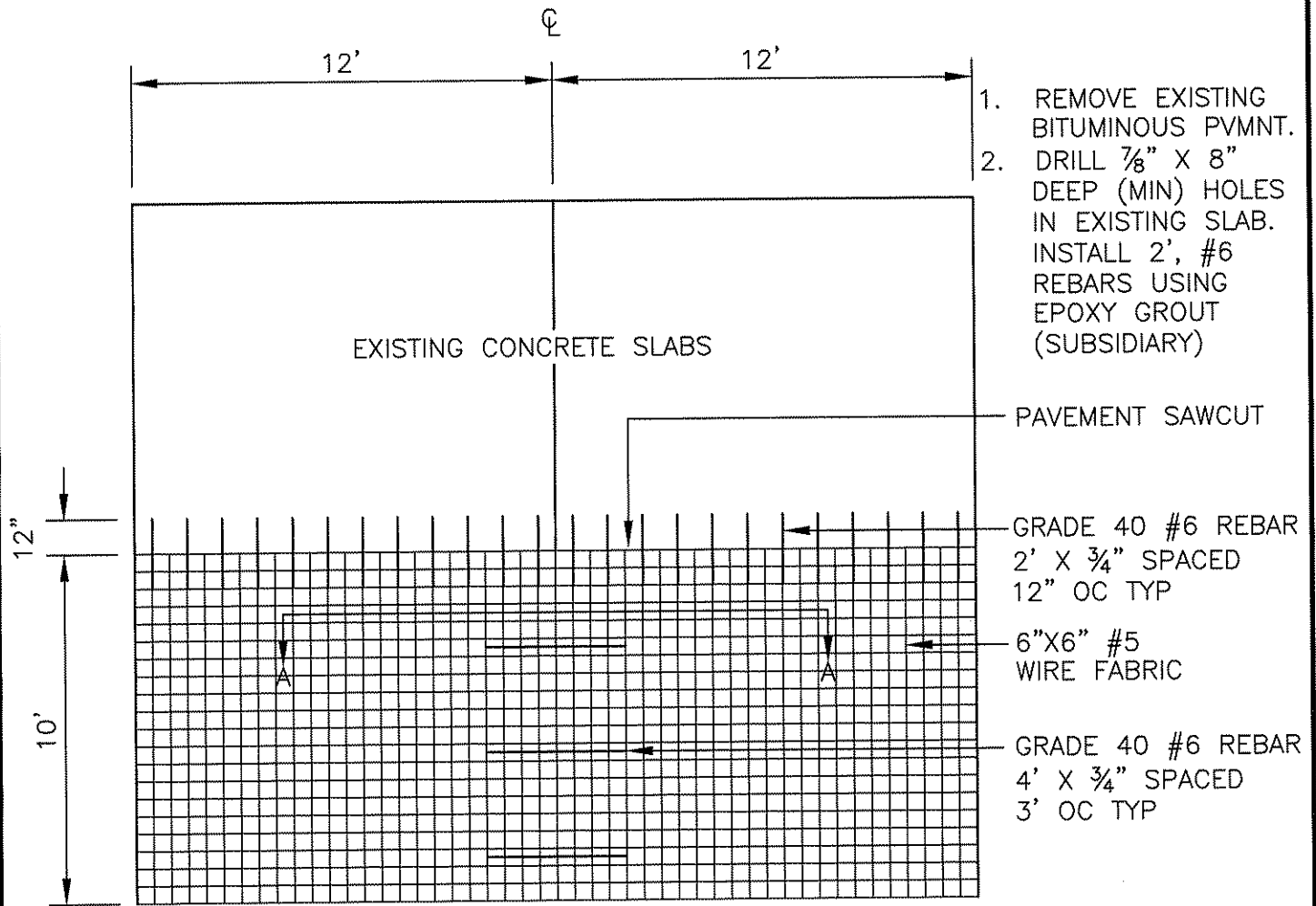
SECTION

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET	
-	-	-	<b>PAVEMENT OVERLAY TRANSITION</b>	DRAWING NO.	R-8
-	-	-		DATE: 12/08	PAGE: 1
-	-	-			
APPROVED BY:					



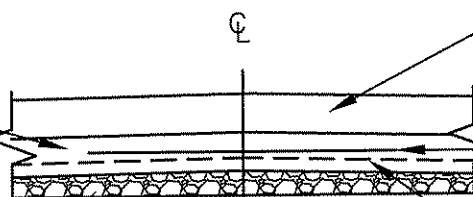
NOTE: WHERE LIMITS OF ADJACENT COLD PLANED AREAS ARE LESS THAN OR EQUAL TO 20', THE AREA BETWEEN SHALL BE COLD PLANED AND RESURFACED

NO.	REVISION	DATE	City of Concord Engineering Services Division		SECTION: SITE/STREET	
-	-	-	<b>SAWCUT REQUIREMENTS</b>		DRAWING NO.	R-9
-	-	-			DATE:	12/08
-	-	-			PAGE:	1
APPROVED BY:						



NHDOT CLASS AA,  
4000 PSI  
CONCRETE. MATCH  
EXISTING DEPTHS

CRUSHED GRAVEL/  
GRAVEL. MATCH  
EXISTING DEPTHS

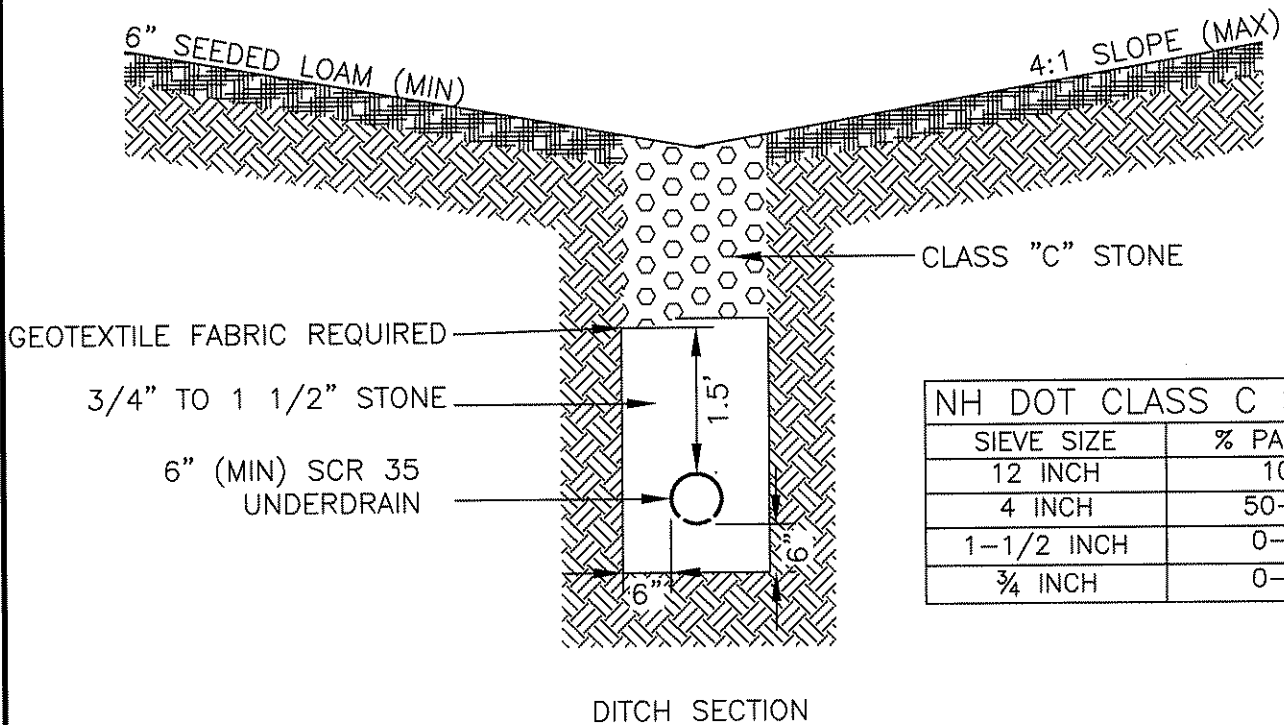
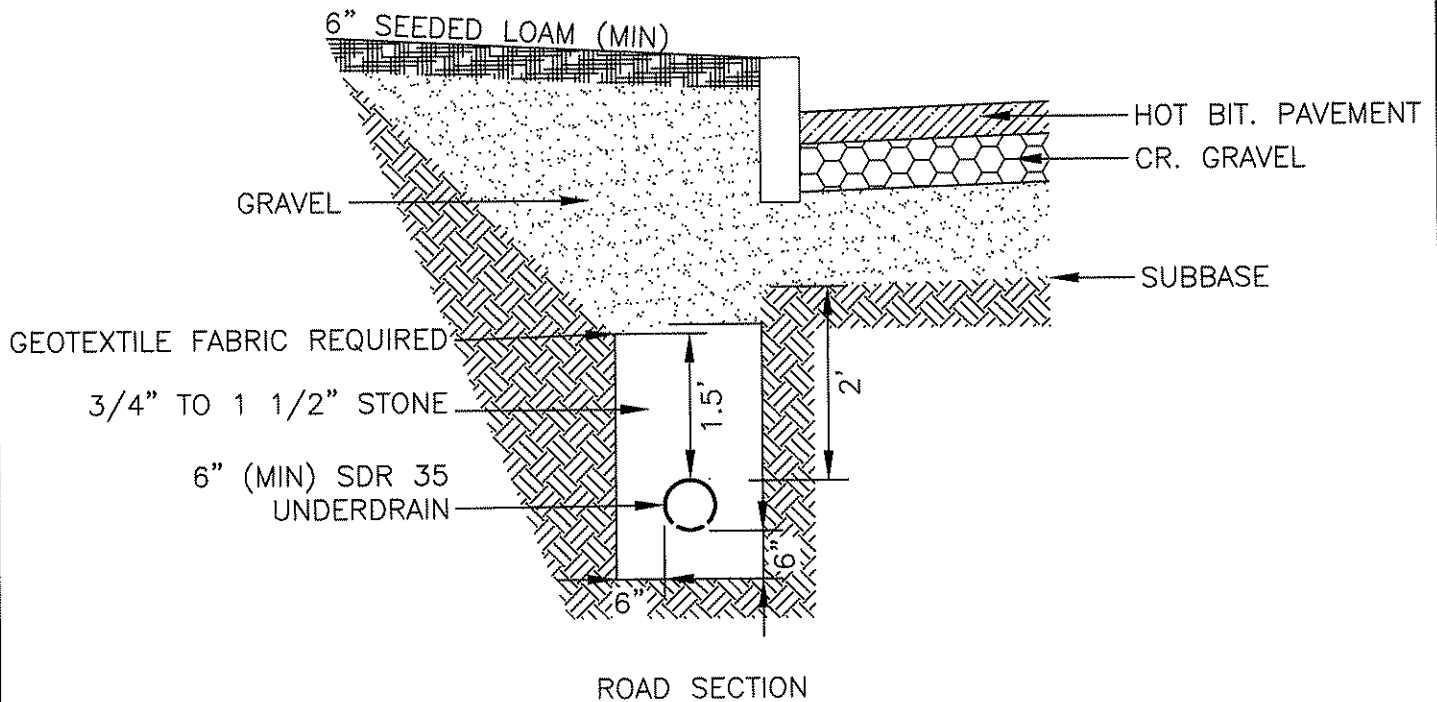


BITUMINOUS CONCRETE  
PAVEMENT. MATCH  
EXISTING DEPTHS

GRADE 40 #6 REBAR  
4' X 3/4" SPACED  
3' OC TYP

6"X6" #5 WIRE FABRIC  
PLACED 1" BELOW  
REBAR

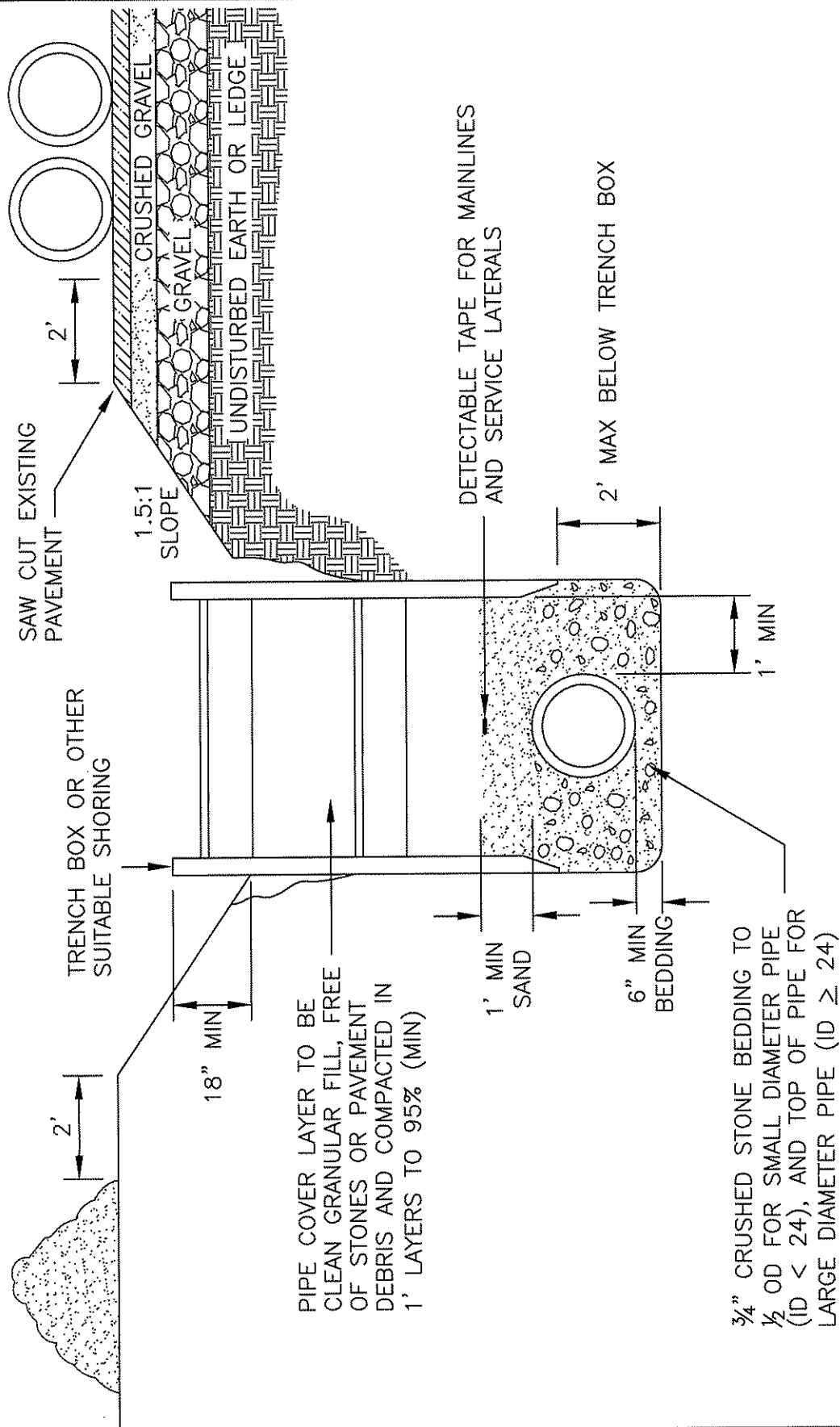
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	<b>CONCRETE TRENCH PATCH</b>	DRAWING NO. R-10
-	-	-		DATE: 12/08 PAGE: 1
-	-	-		
APPROVED BY:				



NH DOT CLASS C STONE	
SIEVE SIZE	% PASSING
12 INCH	100
4 INCH	50-90
1-1/2 INCH	0-30
3/4 INCH	0-10

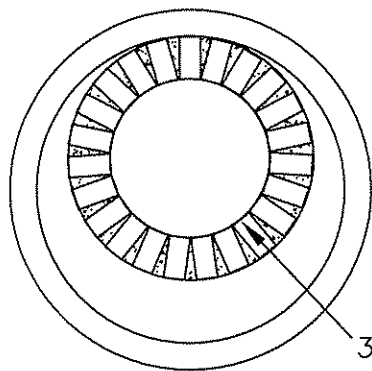
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
-	-	-	<b>UNDERDRAIN TRENCH SECTIONS</b>	DRAWING NO. R-11
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

EXCAVATION TO BE CONSTRUCTED PER TYPICAL SECTION OR RECONSTRUCTED TO MATCH EXISTING PAVEMENT AND SUB-BASE DEPTHS



ALL EXCAVATIONS OVER 20' IN DEPTH MUST BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SEWER/STORM	
-	-	-	SANITARY SEWER & STORM DRAIN PIPE INSTALLATION	DRAWING NO. SD-1	
-	-	-		DATE: 12/08	
-	-	-		PAGE: 1	
APPROVED BY:					



MANHOLE BRICK MASONRY (NO CONCRETE GRADE RINGS)  
30 INCH OPENING REQUIRED FOR ALL MANHOLE STRUCTURES

30" DIAMETER

6" CAST IRON FRAME SET  
ON FULL BED OF MORTAR  
AND SEALED WITH CEMENT

H-20 LOADING REQUIRED

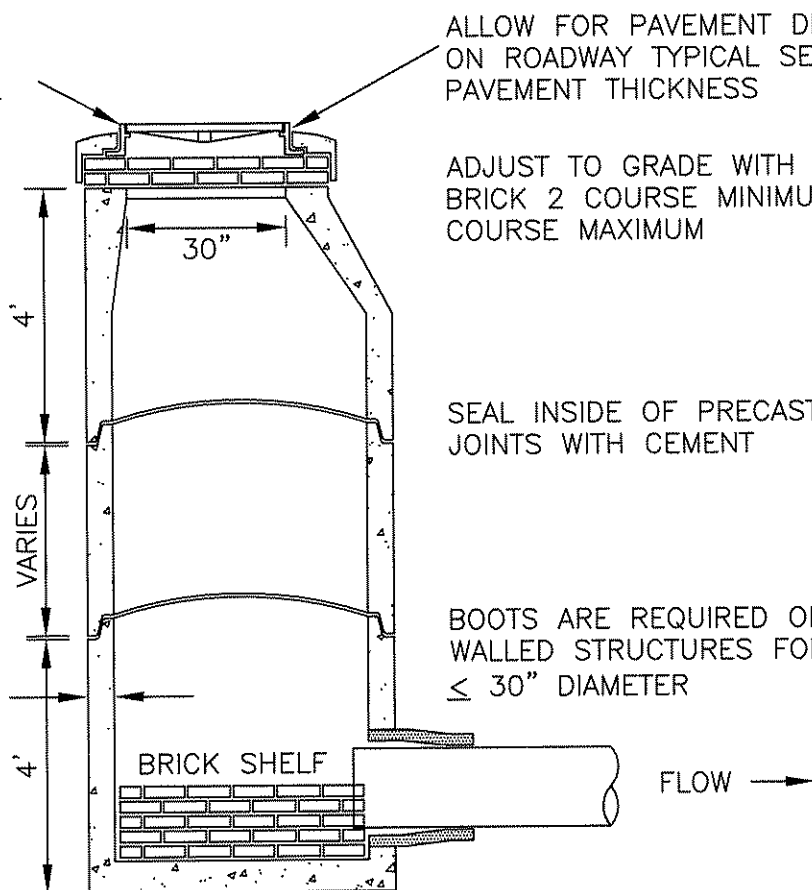
ALLOW FOR PAVEMENT DEPENDING  
ON ROADWAY TYPICAL SECTION;  
PAVEMENT THICKNESS

ADJUST TO GRADE WITH HARD RED  
BRICK 2 COURSE MINIMUM, 5  
COURSE MAXIMUM

SEAL INSIDE OF PRECAST  
JOINTS WITH CEMENT

BOOTS ARE REQUIRED ON 5"  
WALLED STRUCTURES FOR PIPES  
≤ 30" DIAMETER

5" IF REINFORCED  
8" IF UN-REINFORCED



8" CRUSHED STONE BEDDING REQUIRED

#### NOTES:

1. CONCRETE: 4,000 PSI AFTER 28 DAYS
2. SEAL ALL PRECAST JOINTS WITH BITUMASTIC SEAL
3. LIFT HOLES AND BOOT RECESSES ARE TO BE SEALED WITH PORTLAND CEMENT FLUSH TO THE OUTSIDE STRUCTURE WALL PRIOR TO BACKFILLING
4. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES. NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS
5. MANHOLES AND TRAFFIC SIGNAL LOOPS SHALL BE SEPARATED BY A MINIMUM OF 2' TO ALLOW FOR MAINTENANCE OF STRUCTURE

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: STORM DRAIN
-	-	-	DRAIN MANHOLE	DRAWING NO. SD-2
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

MAINTAIN PIPE WIDTH THROUGHOUT  
ENTIRE STRUCTURE

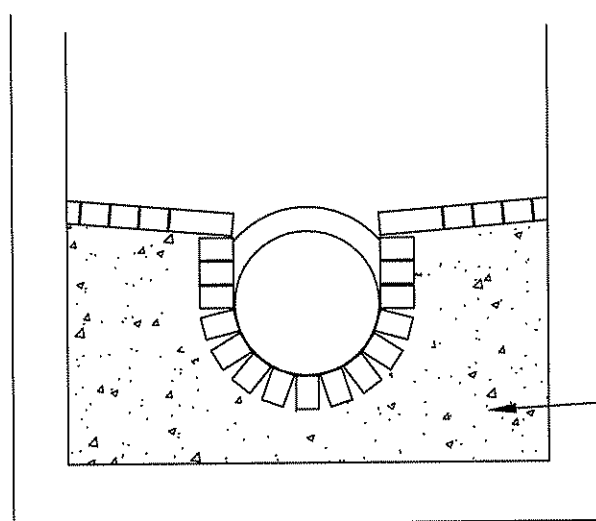
BRICK MASONRY WITH FLAT  
TOOLED JOINTS  $\frac{3}{8}$ " MAX

15" LATERAL

PRECAST MH

24" MAIN

PLAN



BRICK MASONRY WITH FLAT  
TOOLED JOINTS  $\frac{3}{8}$ " MAXIMUM

BRICK MASONRY OR 2000 PSI  
CONCRETE UNDER BRICK SHELF

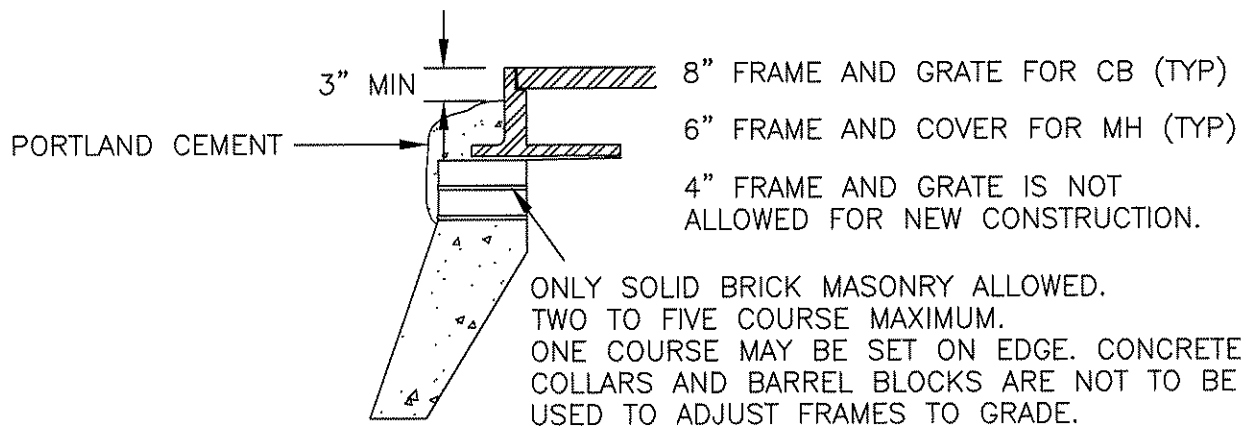
12" PIPE - 9 BRICK MINIMUM  
15" PIPE - 11 BRICK MINIMUM  
24" PIPE - BRICK TO TOP  
30" PIPE - BRICK TO TOP

SECTION

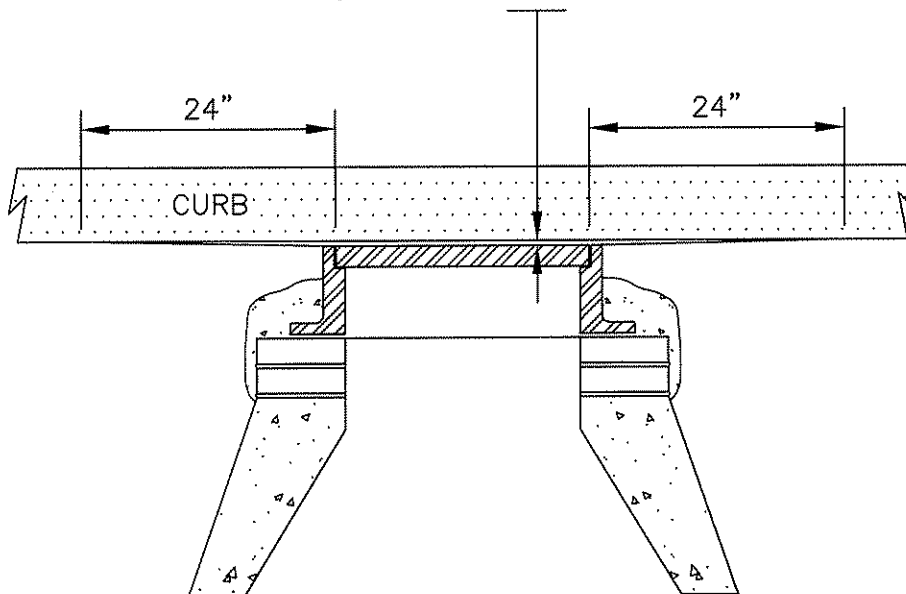
NOTES:

1. FOR 12" TO 15", CONSTRUCT INVERT THROUGH LOWER HALF OF PIPE (24" RCP SHOWN AS AN EXAMPLE)
2. FOR MAINS GREATER THAN 15", CONSTRUCT INVERT TO TOP OF PIPE
3. MAINTAIN TROUGH WIDTH THROUGH STRUCTURE
4. TYPICAL BRICK, ASTM DESIGNATION: C 321-93

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SEWER/STORM
-	-	-	<b>STORM DRAIN BRICK SHELF CONSTRUCTION</b>	DRAWING NO. SD-3
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



CATCH BASINS TO BE MAX  $\frac{1}{2}$ " BELOW FINAL PAVEMENT.  
MANHOLES TO BE  $\frac{1}{8}$ " BELOW FINAL PAVEMENT.



REINFORCED CONCRETE DROP INLET TOP  
WITH VERTICAL CURB

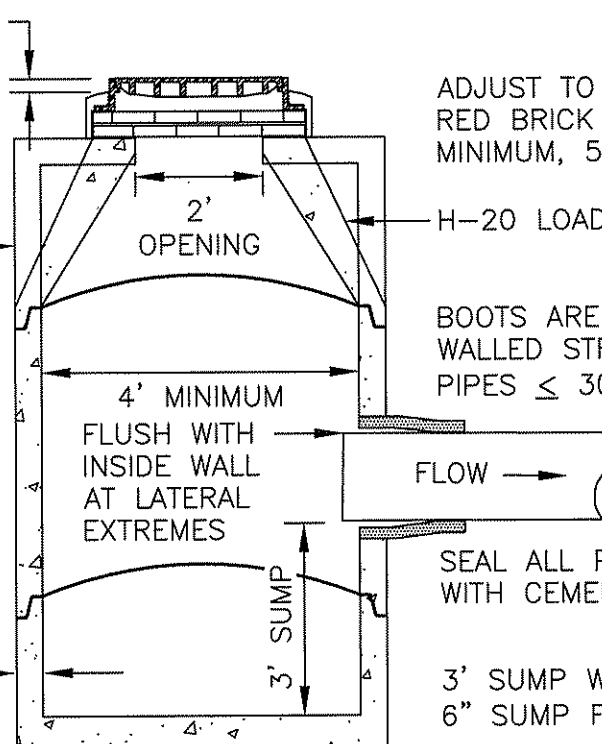
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SEWER/STORM
-	-	-	<b>ADJUSTING FRAMES TO GRADE</b>	DRAWING NO. SD-4
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				



8" CAST IRON FRAME SET ON FULL BED OF MORTAR AND SEALED WITH CEMENT. CEMENT SHOULD BE KEPT BELOW THE BASE COUSE OF PAVEMENT (3" MINIMUM)

FLAT SLAB TOP REQUIRED WHEN THE DEPTH FROM THE TOP OF THE PIPE TO THE GRATE IS < 48"

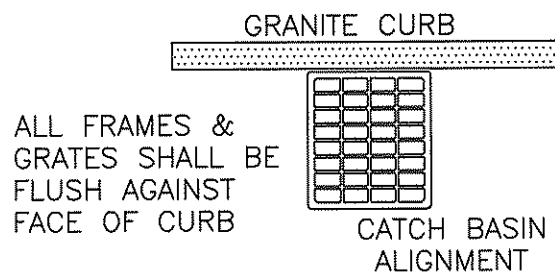
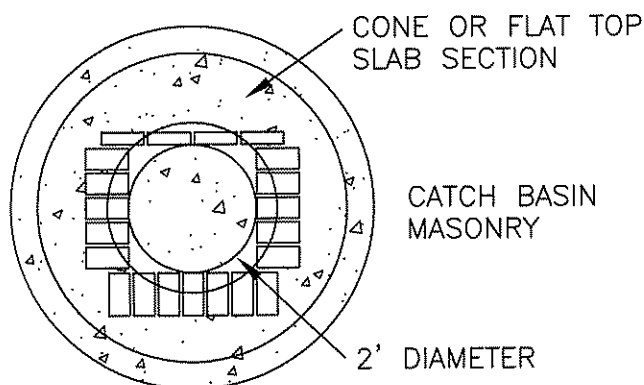
5" IF REINFORCED  
8" IF UN-REINFORCED



8" CRUSHED STONE BEDDING

#### NOTES:

1. CONCRETE: 4,000 PSI AFTER 28 DAYS
2. SEAL ALL PRECAST JOINTS WITH BITUMASTIC SEAL
3. LIFT HOLES AND BOOT RECESSES ARE TO BE SEALED WITH PORTLAND CEMENT FLUSH TO THE OUTSIDE STRUCTURE WALL PRIOR TO BACKFILLING
4. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES. NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS
5. MANHOLES AND TRAFFIC SIGNAL LOOPS SHALL BE SEPARATED BY A MINIMUM OF 2' TO ALLOW FOR MAINTENANCE OF STRUCTURE



#### NOTES:

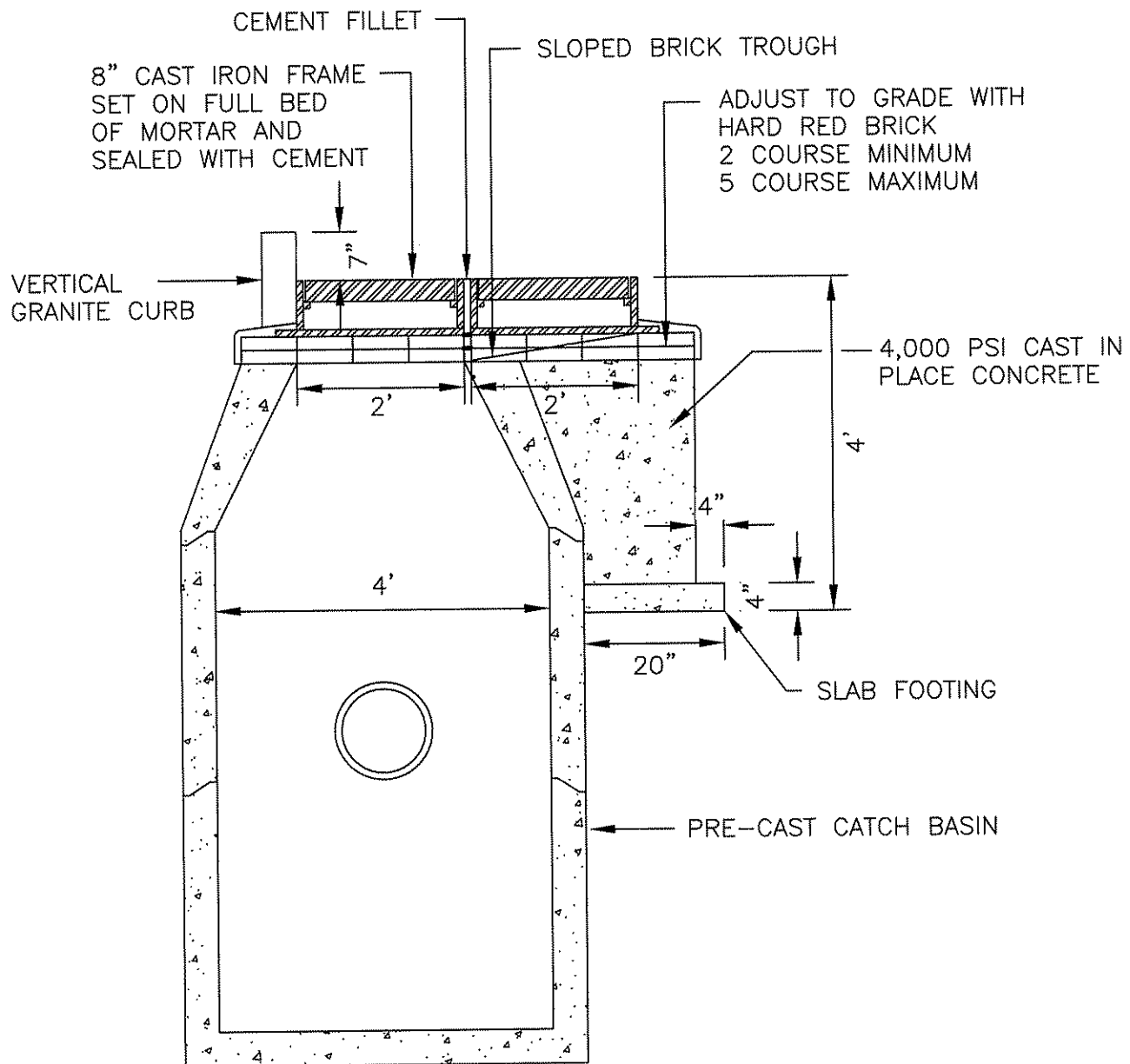
1. CAST IRON FRAME THREE FLANGED GRATE FOR VERTICAL SLOPE CURB INSTALLATIONS
2. NHDOT TYPE "F" GRATE REQUIRED FOR ROADWAYS HAVING SLOPES EQUAL TO OR GREATER THAN 3%. TYPE "F" SHALL BE BICYCLE SAFE

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: STORM DRAIN
-	-	-	<b>CATCH BASIN / DROP INLET</b>	DRAWING NO. SD-5
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

	MINIMUM SLOPE VALUES (FT/FT)*	
PIPE SIZE	SANITARY APPLICATIONS	STORM DRAINS
8"	0.0060	N/A
10"	0.0028	N/A
12"	0.0022	0.0030
15"	0.0015	0.0023
18"	0.0012	0.0018
21"	0.0010	N/A
24"	0.0008	0.0012
27"	0.0007	N/A
30"	0.0006	0.0009
36"	0.0005	0.0007

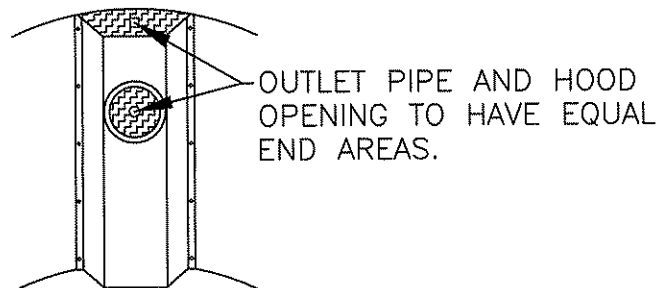
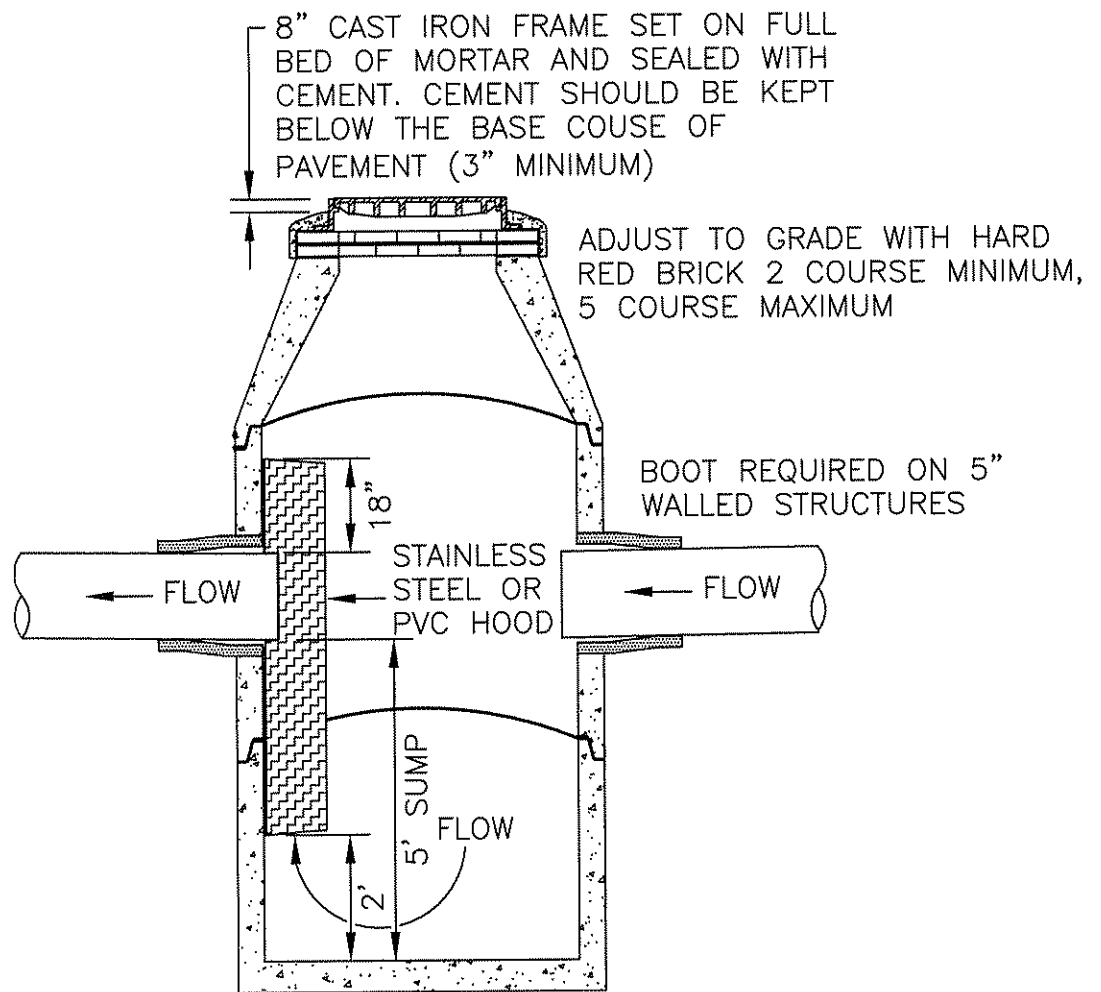
\* THESE VALUES ARE BASED ON MINIMUM VELOCITIES OF 2 FEET PER SECOND ON SANITARY SEWERS AND 2.5 FEET PER SECOND FOR STORM DRAINS WHILE FLOWING FULL. THIS VALUE SET BY THE CITY ENGINEER.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SEWER/STORM	
-	-	-	HYDRAULIC FLOW CHART	DRAWING NO.	SD-6
-	-	-		DATE: 12/08	PAGE: 1
-	-	-			
APPROVED BY:					



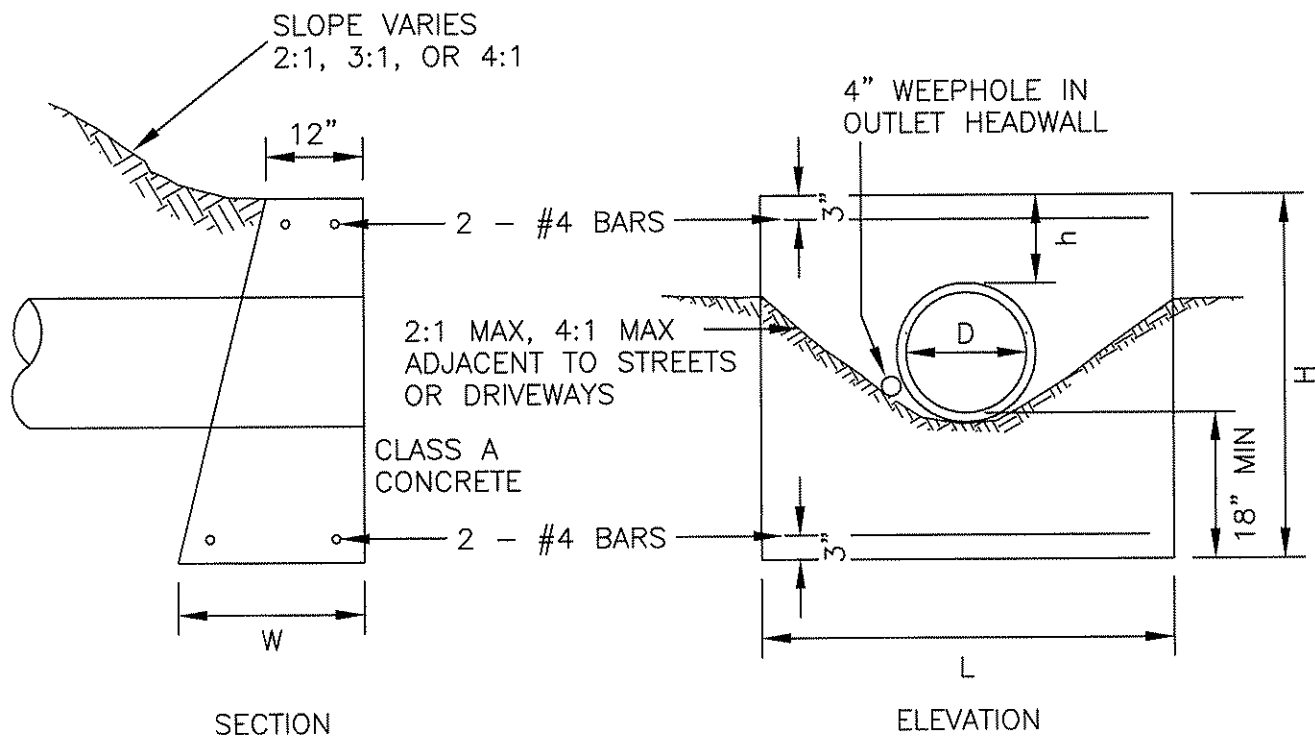
NOTE: DETAIL TO BE USED WHEN TYING INTO EXISTING STORM DRAIN SYSTEM OR MATCHING TO EXISTING CURB. DETAIL SHOULD NOT BE USED FOR NEW CONSTRUCTION

NO.	REVISION	DATE	City of Concord Engineering Services Division		SECTION: STORM DRAIN	
—	—	—	<b>DOUBLE FRAME AND GRATE CATCH BASIN</b>		DRAWING NO.	SD-7
—	—	—			DATE:	12/08
—	—	—			PAGE:	1
APPROVED BY:						



BOLT TO STRUCTURE WALL USING  $\frac{1}{2}$ " X 4" STAINLESS STEEL LAG BOLTS. USE 5 BOLTS PER SIDE EQUALLY SPACED AND 3" FROM TOP AND BOTTOM. 12 GAGE STAINLESS BAFFLE OR  $\frac{1}{4}$ " PVC. WATER TIGHT SEAL REQUIRED AT STRUCTURE WALL

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: STORM DRAIN
-	-	-	OIL/SEDIMENT CONTROL BARRIER	DRAWING NO. SD-8
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

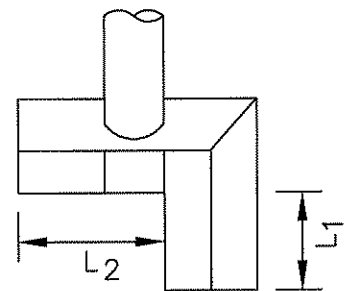


DIAMETER D INCHES	MASONRY PER STD HDR (CY)	STEEL PER STD HDR (LB)	LENGTH OF BARS	L	H	W	h
12	0.80	11	3'-9"	4'-2"	3'-9"	1'-11"	1'-3"
15	1.32	15	5'-7"	5'-11"	4'-3"	2'	1'-6"
18	1.66	15	5'-7"	6'-11"	4'-6"	2'-1"	1'-6"
24	2.41	24	8'-6"	8'-10"	5'-0"	2'-3"	1'-6"
30	3.32	29	10'-6"	10'-10"	5'-6"	2'-4"	1'-6"
36	4.43	35	12'-6"	12'-10"	6'-0"	2'-6"	1'-6"
42	6.28	42	14'-11"	15'-6"	6'-9"	2'-8"	1'-9"
48	7.77	46	16'-11"	17'-6"	7'-3"	2'-9"	1'-9"
54	9.46	53	18'-10"	19'-5"	7'-9"	2'-11"	1'-9"
60	11.42	57	20'-10"	21'-5"	8'-3"	3'	1'-9"
66	13.68	64	22'-10"	23'-5"	8'-9"	3'-2"	1'-9"
72	15.79	68	24'-10"	25'-4"	9'-3"	3'-3"	1'-9"

$$L_1 + L_2 = L$$

$$L_1 = \frac{L-D}{2}$$

$$L_2 = \frac{L+D}{2}$$



ALTERNATE "L" HEADWALL

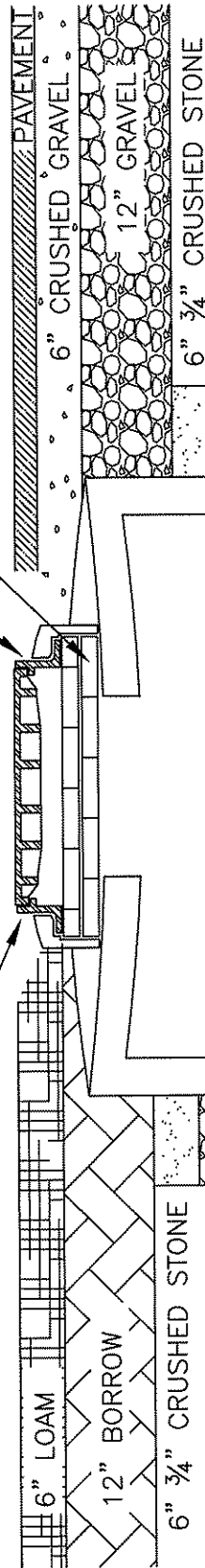
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: STORM DRAIN
-	-	-	STANDARD HEADWALL	DRAWING NO. SD-9
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

PLACED IN GRASS      PLACED IN PAVEMENT

N.H.D.O.T. TYPE "B"  
FRAME AND GRATE  
SET ON FULL BED OF  
MORTAR AND SEALED  
WITH CEMENT

ALLOW 3" FOR  
PAVEMENT

ADJUST TO GRADE WITH  
HARD RED BRICK  
2 COURSE MINIMUM  
5 COURSE MAXIMUM



#### NOTES:

1. CONCRETE: 4,000 PSI  
AFTER 28 DAYS
2. ALL PRECAST  
COMPONENTS SHALL BE  
DESIGNED FOR H-20  
LOADING
3. PERFORATIONS SHALL  
BE 12" OFF CENTER  
BOTH WAYS
4. SEAL ALL PRECAST  
JOINTS WITH BITUMASTIC  
SEAL
5. LIFT HOLES ARE TO BE  
SEALED WITH PORTLAND  
CEMENT FLUSH TO THE  
OUTSIDE STRUCTURE  
WALL PRIOR TO  
BACKFILLING
6. DEPTHS AND WIDTHS OF  
STRUCTURE AND  
CRUSHED STONE VARIES  
PER STORMWATER  
CALCULATIONS

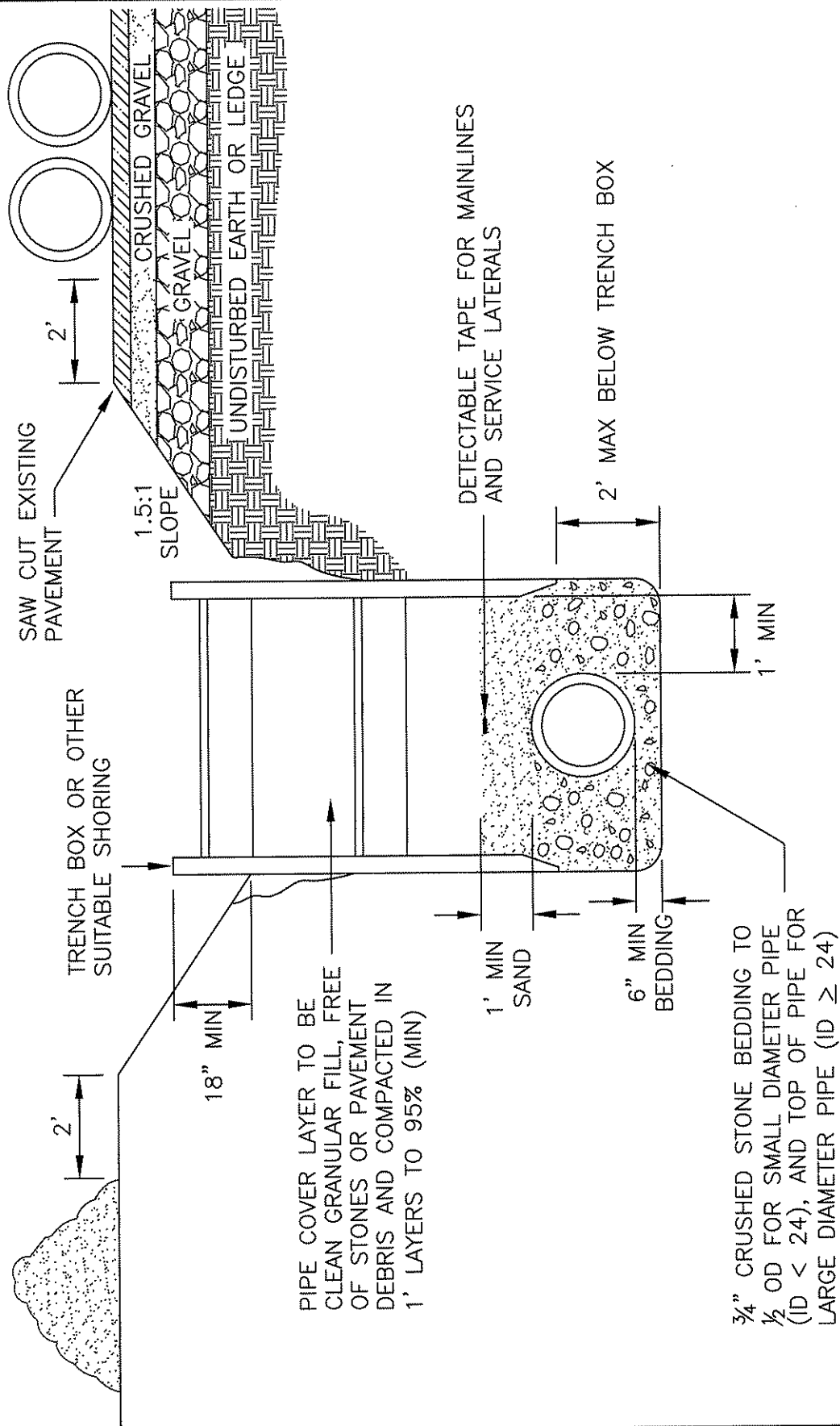
1 1/2" - 3" WASHED  
CRUSHED STONE

ALL STONE SHALL BE  
WRAPPED IN GEOTEXTILE  
FILTER FABRIC

UNDISTURBED NATIVE SOIL

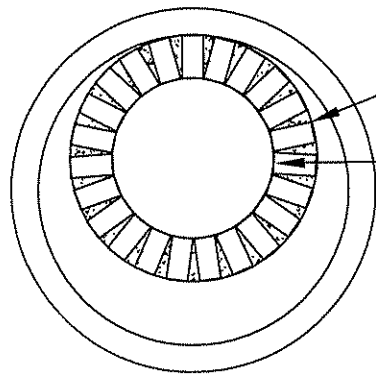
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: STORM DRAIN
-	-	-	<b>DRYWELL</b>	DRAWING NO. SD-10
-	-	-		DATE: 12/08
-	-	-		PAGE: 1
APPROVED BY:				

EXCAVATION TO BE CONSTRUCTED PER TYPICAL SECTION OR RECONSTRUCTED TO MATCH EXISTING PAVEMENT AND SUB-BASE DEPTHS



ALL EXCAVATIONS OVER 20' IN DEPTH MUST BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SEWER/STORM	
-	-	-	SANITARY SEWER & STORM DRAIN PIPE INSTALLATION	DRAWING NO. SM-1	
-	-	-		DATE: 12/08	
-	-	-		PAGE: 1	
APPROVED BY:					

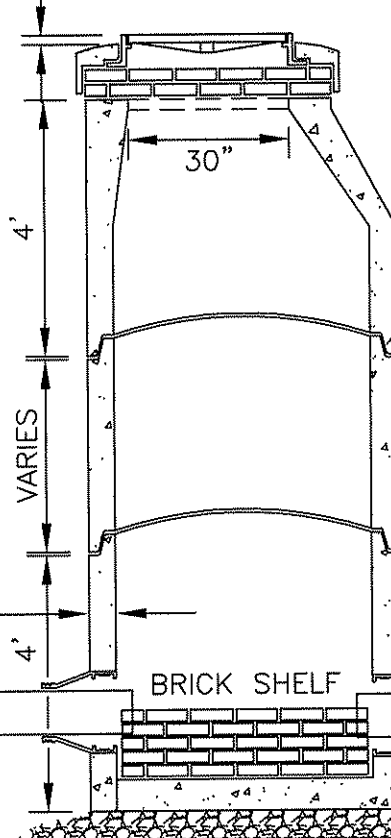


MANHOLE BRICK MASONRY (NO CONCRETE GRADE RINGS)

30 INCH OPENING REQUIRED FOR ALL MANHOLE STRUCTURES

8" CAST IRON FRAME SET ON FULL BED OF MORTAR AND SEALED WITH CEMENT. CEMENT SHOULD BE KEPT BELOW THE BASE COUSE OF PAVEMENT (3" MINIMUM)

ADJUST TO GRADE WITH HARD RED BRICK 2 COURSE MINIMUM, 5 COURSE MAXIMUM



BUTYL RUBBER SEALANT

BOOT REQUIRED ON 5" WALLED STRUCTURES

5" IF REINFORCED  
8" IF UN-REINFORCED

FLOW →

BRICK SHELF

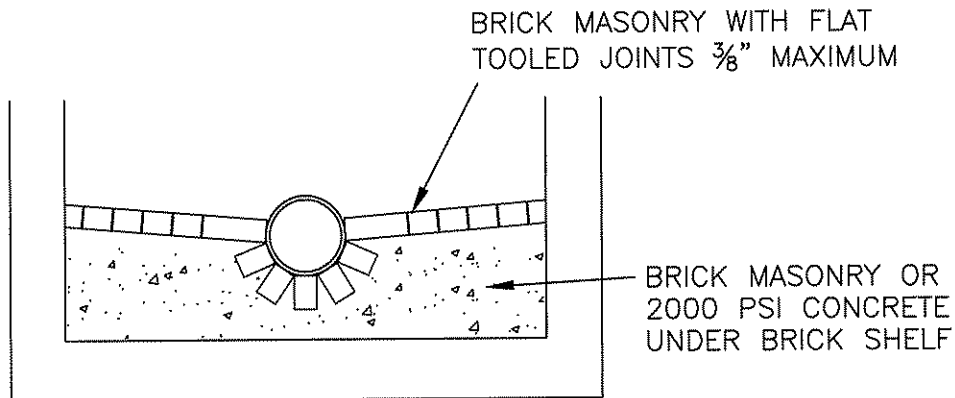
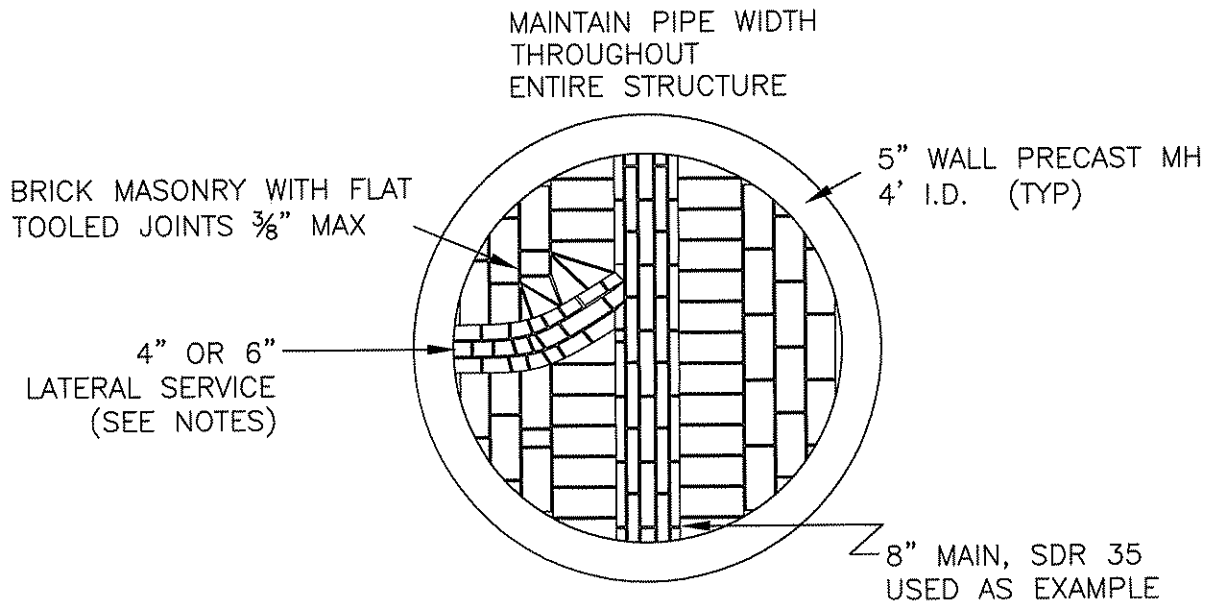
8" CRUSHED STONE BEDDING

#### NOTES:

1. CONCRETE: 4,000 PSI AFTER 28 DAYS
2. H-20 LOADING REQUIRED
3. ON INSIDE OF STRUCTURE, PRE-CAST JOINTS AND LADDER RUNG HOLES TO BE SEALED WITH PORTLAND CEMENT
4. LIFT HOLES ARE TO BE SEALED WITH PORTLAND CEMENT FLUSH TO THE OUTSIDE STRUCTURE WALL PRIOR TO BACKFILLING
5. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES. NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS
6. MANHOLES AND TRAFFIC SIGNAL LOOPS SHALL BE SEPARATED BY A MINIMUM OF 2' TO ALLOW FOR MAINTENANCE OF STRUCTURE

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SEWER
-	-	-		DRAWING NO.	SM-2
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:			SEWER MANHOLE		



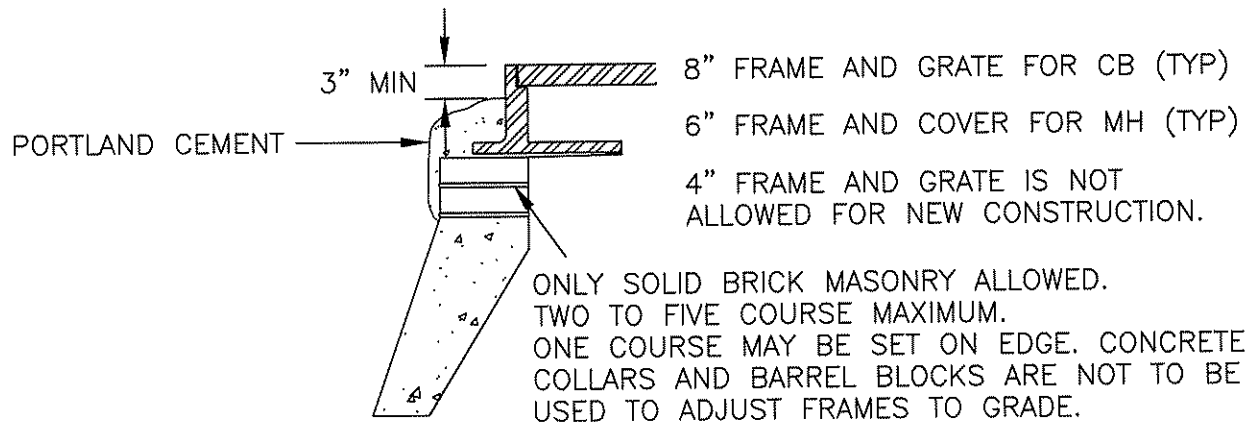


8" PIPE — 7 BRICK MINIMUM (THIS WILL  
BE JUST ABOVE THE MIDPOINT)  
10" PIPE — 7 BRICK MINIMUM  
12" PIPE — 9 BRICK MINIMUM  
15" PIPE — 11 BRICK MINIMUM

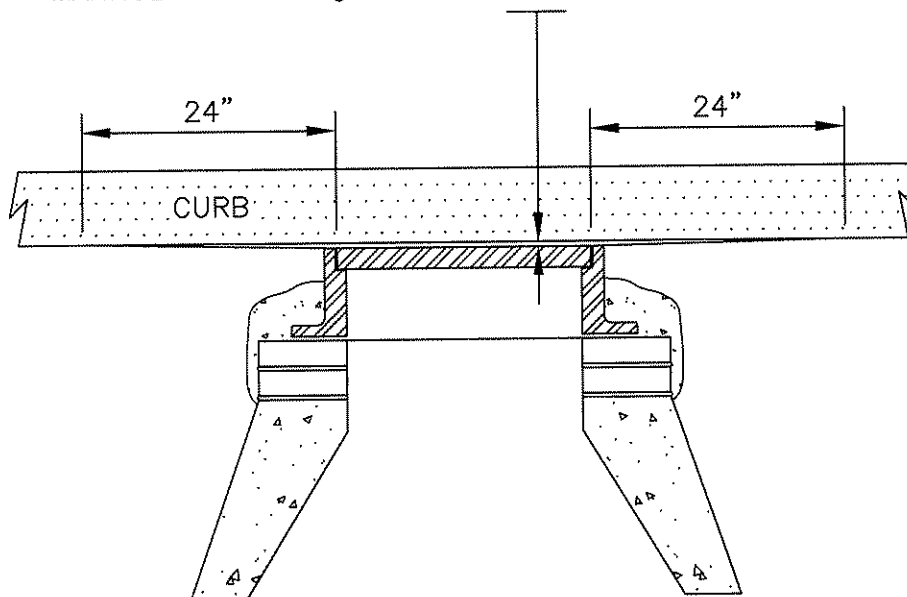
NOTES:

1. FOR MAINS 8" TO 15", CONSTRUCT INVERT THROUGH LOWER HALF OF PIPE (MINIMUM) (8" PVC SHOWN AS AN EXAMPLE)
2. FOR MAINS GREATER THAN 15", CONSTRUCT INVERT TO TOP OF PIPE
3. MAINTAIN TROUGH WIDTH THROUGH STRUCTURE
4. TYPICAL BRICK, ASTM DESIGNATION: C 321-93
5. SERVICE CONNECTIONS SHOULD BE PER THE "SEWER SERVICE CONNECTION / INSIDE DROP MANHOLE" DETAIL. WHERE GRADES PROHIBIT SUCH A CONNECTION THE CONNECTION SHOULD BE AS SHOWN WITH THE SERVICE INVERT 2" ABOVE THE INVERT OF THE MAIN WHERE IT ENTERS THE MANHOLE.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SEWER/STORM
—	—	—	<b>SANITARY BRICK SHELF CONSTRUCTION</b>	DRAWING NO. SM-3
—	—	—		DATE: 12/08
—	—	—		PAGE: 1
APPROVED BY:				

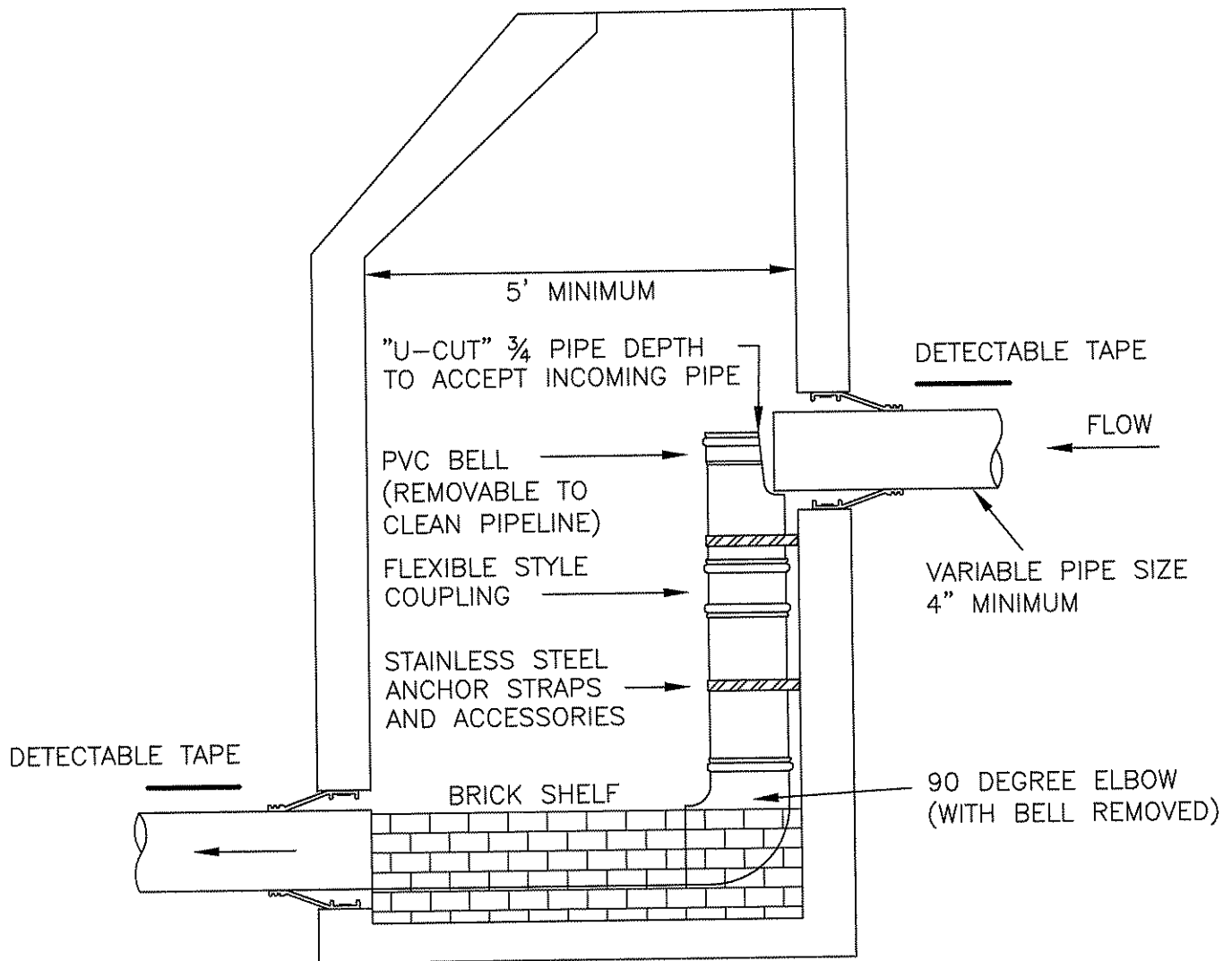


CATCH BASINS TO BE MAX  $\frac{1}{2}$ " BELOW FINAL PAVEMENT.  
MANHOLES TO BE  $\frac{1}{8}$ " BELOW FINAL PAVEMENT.



REINFORCED CONCRETE DROP INLET TOP  
WITH VERTICAL CURB

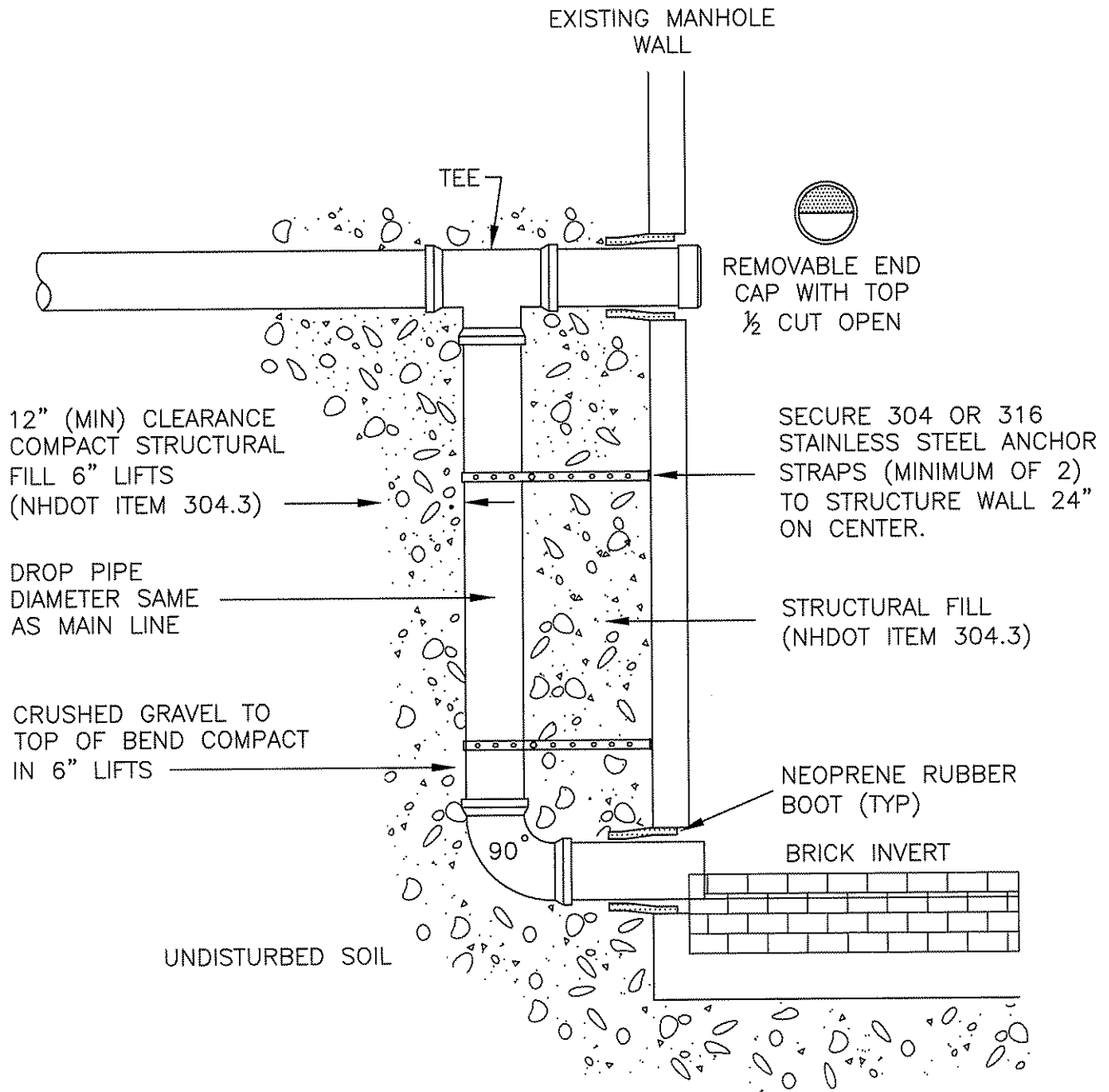
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SEWER/STORM	
-	-	-	<b>ADJUSTING FRAMES TO GRADE</b>	DRAWING NO.	SM-4
-	-	-		DATE: 12/08	PAGE: 1
-	-	-			
APPROVED BY:					



NOTES:

1. IF DISTANCE FROM SERVICE TO MAIN IS  $\geq 2'$  AN INSIDE DROP IS REQUIRED. OTHERWISE INVERT OF SERVICE MUST MATCH INVERT OF MAIN
2. 4" SERVICES REQUIRE A 6" DIAMETER DROP. OTHERWISE, DROP DIAMETER TO MATCH INLET DIAMETER
3. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE TO THE CITY OF CONCORD STANDARDS FOR SANITARY MANHOLE CONSTRUCTION
4. INSIDE DROP MANHOLES SHALL HAVE A MINIMUM 5' INSIDE DIAMETER FOR 8" PIPE
5. ANCHOR STRAPS (MINIMUM OF 2) AND BOLTS TO BE 304 OR 316 STAINLESS STEEL AND NOT MORE THAN 3' ON CENTER. SECURE AS DIRECTED: STRAPS - 1" WIDE, BOLTS -  $\frac{3}{8}" \times 2\frac{1}{2}"$  LONG

NO.			City of Concord Engineering Services Division		SECTION: SEWER	
-	-	-	<b>SEWER MAIN INSIDE DROP MANHOLE</b>		DRAWING NO.	SM-5
-	-	-			DATE:	12/08
-	-	-			PAGE:	1
APPROVED BY:						



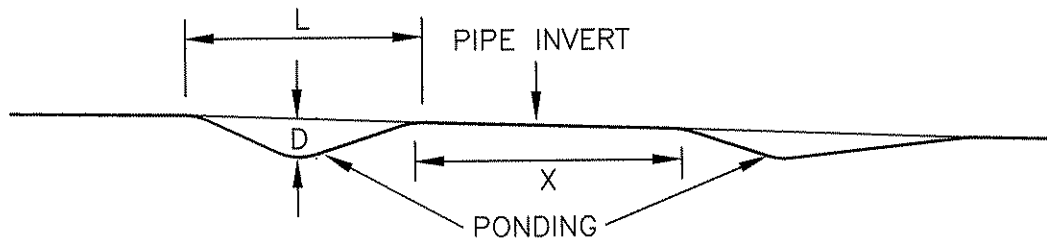
NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SEWER
-	-	-	<b>SEWER MAIN OUTSIDE DROP MANHOLE</b>	DRAWING NO.	SM-6
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					

	MINIMUM SLOPE VALUES (FT/FT)*	
PIPE SIZE	SANITARY APPLICATIONS	STORM DRAINS
8"	0.0060	N/A
10"	0.0028	N/A
12"	0.0022	0.0030
15"	0.0015	0.0023
18"	0.0012	0.0018
21"	0.0010	N/A
24"	0.0008	0.0012
27"	0.0007	N/A
30"	0.0006	0.0009
36"	0.0005	0.0007

\* THESE VALUES ARE BASED ON MINIMUM VELOCITIES OF 2 FEET PER SECOND ON SANITARY SEWERS AND 2.5 FEET PER SECOND FOR STORM DRAINS WHILE FLOWING FULL. THIS VALUE SET BY THE CITY ENGINEER.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SEWER/STORM	
-	-	-	HYDRAULIC FLOW CHART	DRAWING NO.	SM-7
-	-	-		DATE: 12/08	PAGE: 1
-	-	-			
APPROVED BY:					

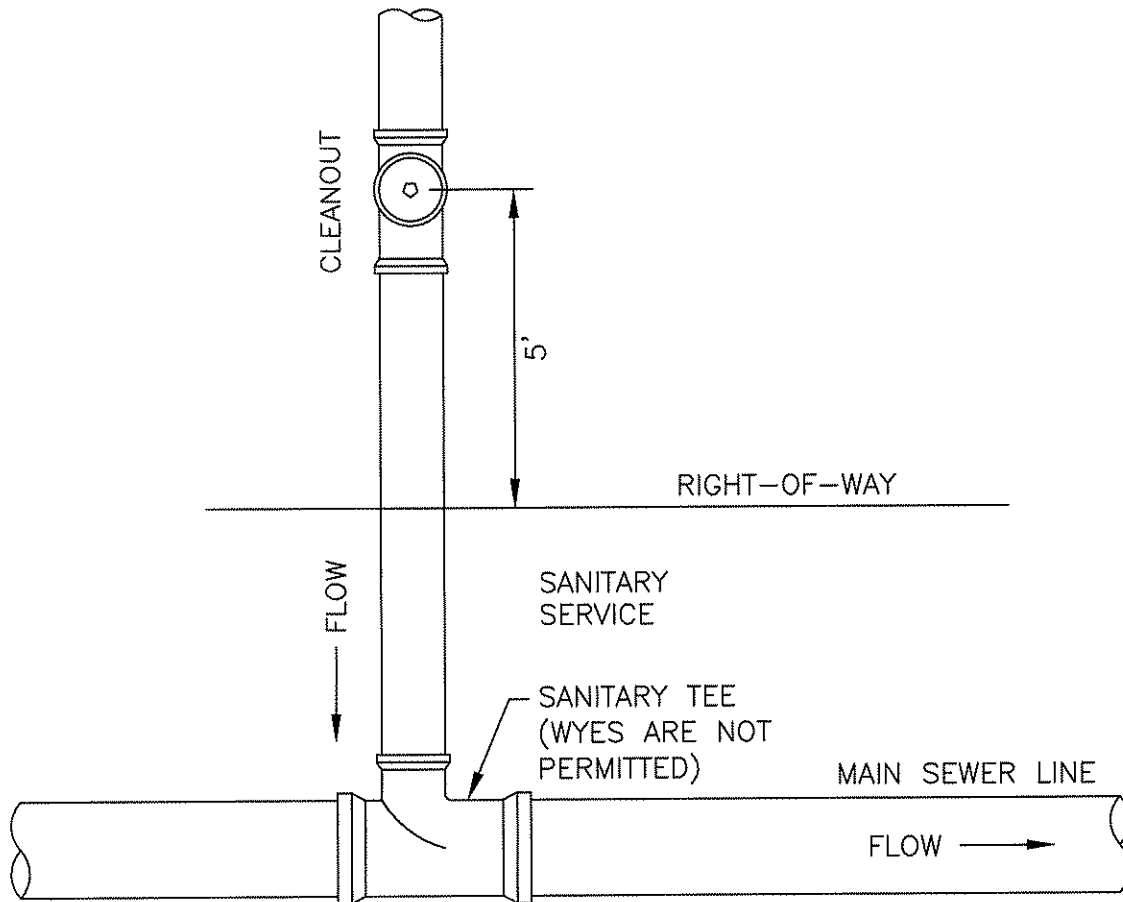
PIPE DIAMETER	MAXIMUM ALLOWABLE DEPTH (D) OF SAG	MAXIMUM ALLOWABLE LENGTH (L) OF SAG	MINIMUM ALLOWABLE DISTANCE (X) BETWEEN SAGS
4"	NONE	NONE	NONE
6"	NONE	NONE	NONE
8"	$\frac{1}{2}$ "	4 FT	40 FT
10"	$\frac{1}{2}$ "	6 FT	60 FT
12" & LARGER	$\frac{1}{2}$ "	8 FT	80 FT



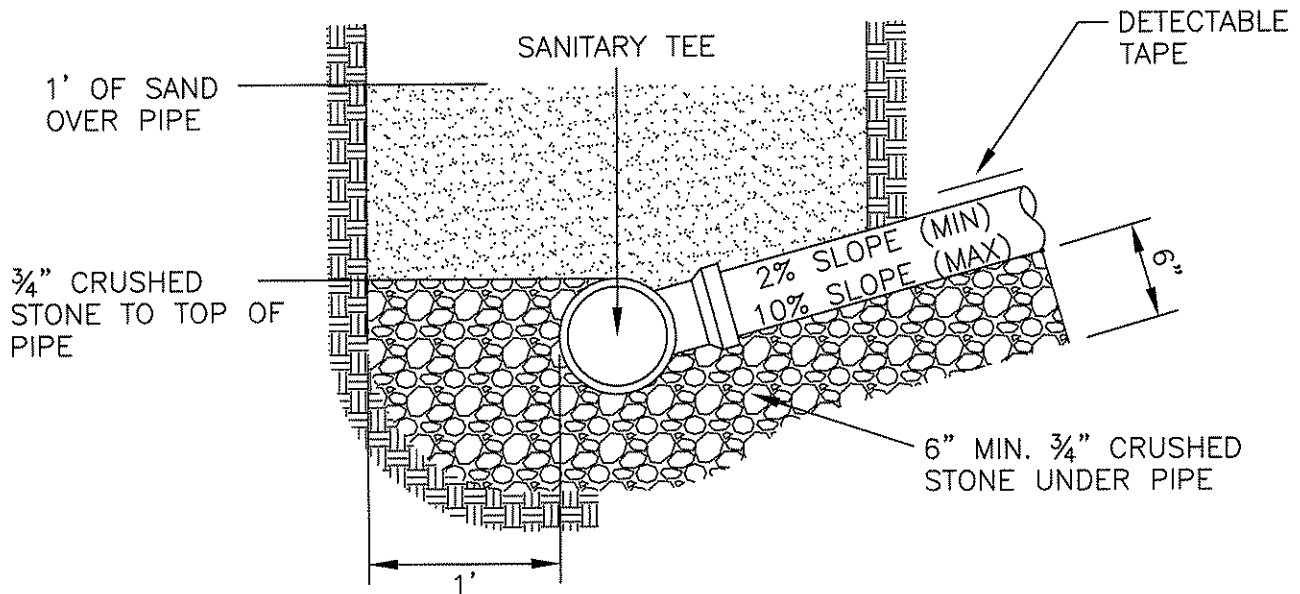
NOTES:

1. 4" AND 6" LINES ARE TYPICALLY USED FOR SERVICE CONNECTIONS AND ARE LAID AT A MINIMUM OF  $\frac{1}{4}$ " AND  $\frac{1}{8}$ " PER FOOT RESPECTIVELY TO ELIMINATE PROBLEMS.
2. DUCTILE IRON PIPE IS RECOMMENDED FOR SLOPES LESS THAN 0.006%

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SEWER
-	-	-	<b>LIMIT OF SAGS IN PVC SANITARY SEWER PIPE</b>	DRAWING NO.	SM-8
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



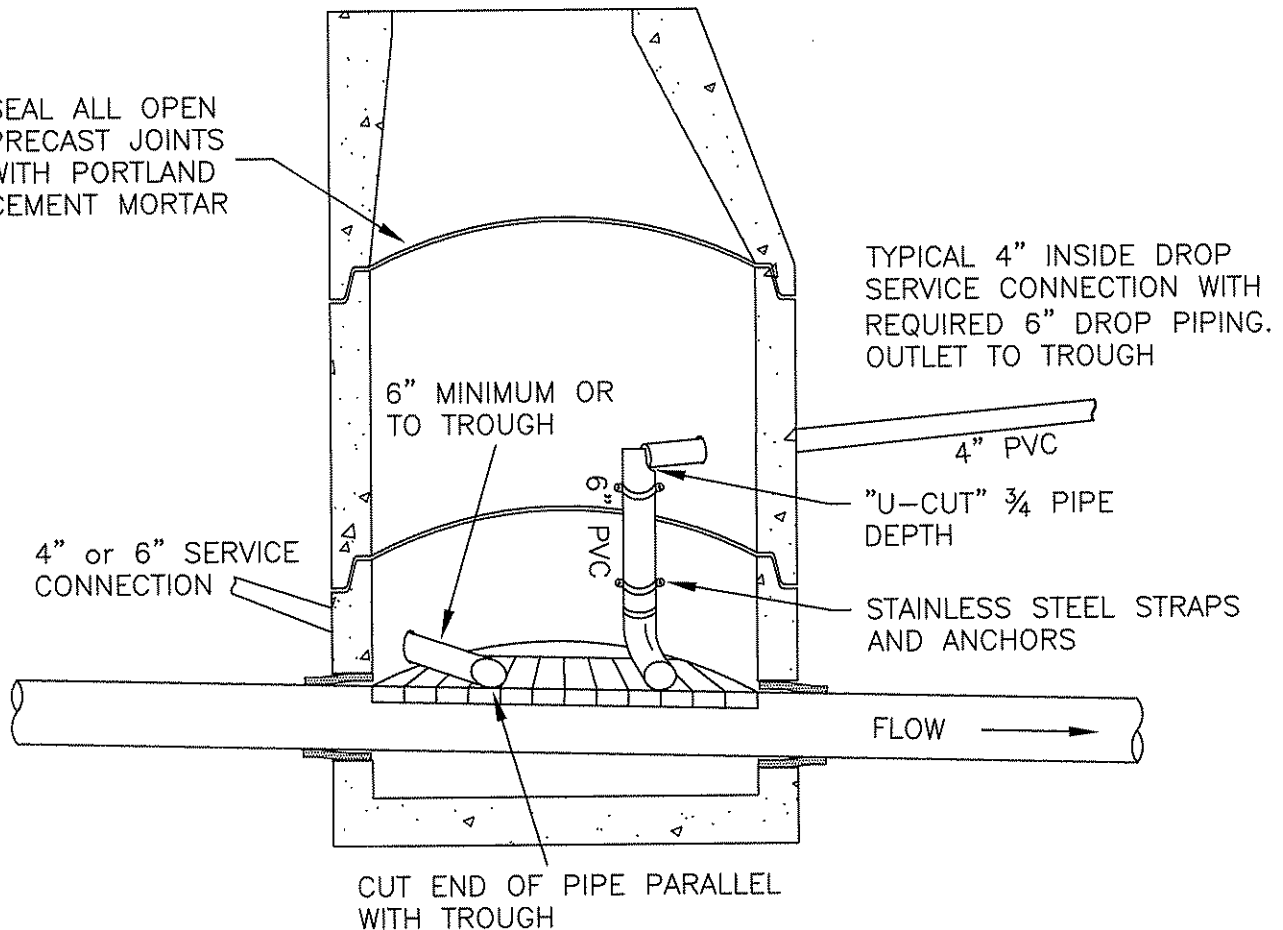
PLAN



SECTION

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SEWER
-	-	-	<b>SEWER SERVICE CONNECTION AT MAIN</b>	DRAWING NO.	SS-1
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					

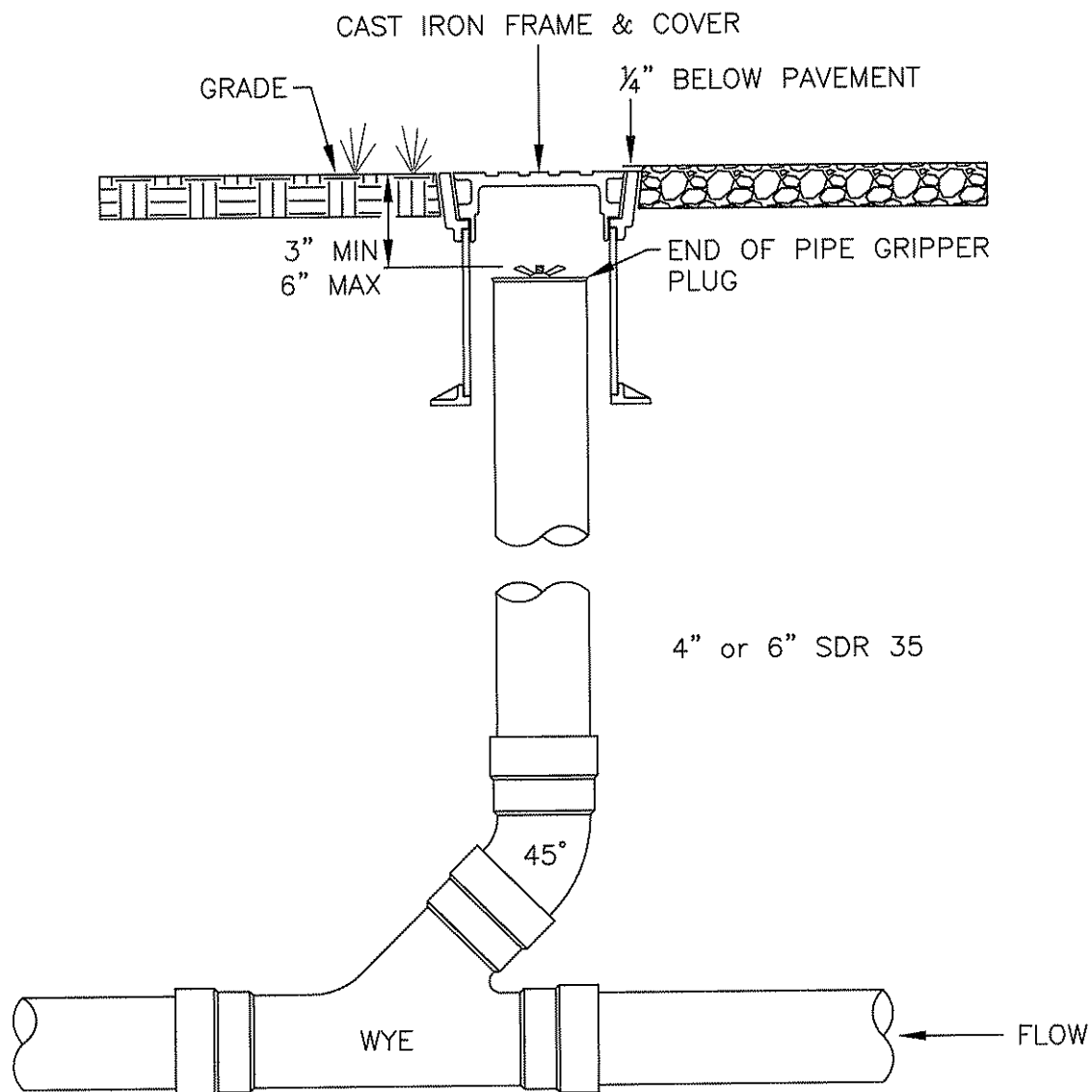
SEAL ALL OPEN  
PRECAST JOINTS  
WITH PORTLAND  
CEMENT MORTAR



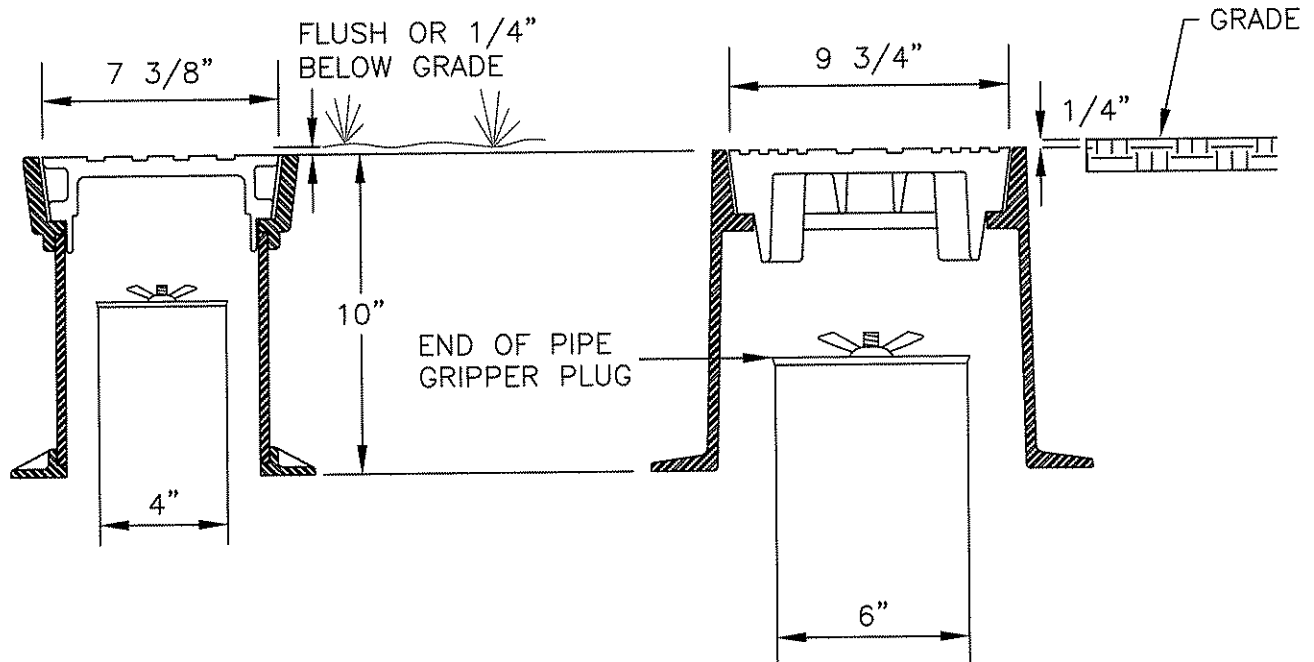
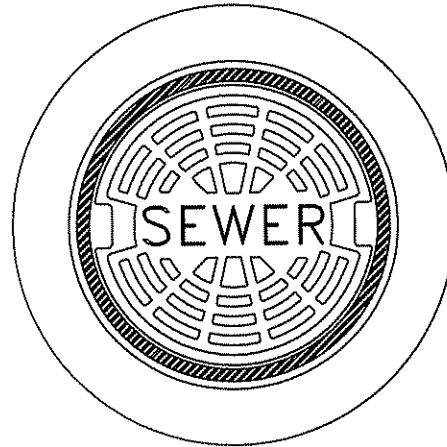
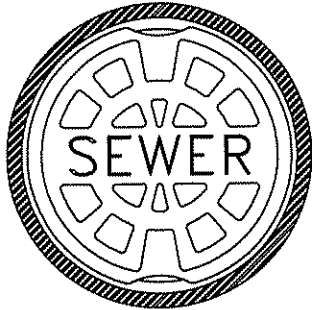
SHOULD THE SERVICE CONNECTION ENTER A STRUCTURE MORE THAN 24"  
ABOVE THE INVERT A DROP CONNECTION WILL BE NECESSARY

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	ROADWAY
-	-	-	SEWER SERVICE CONNECTION / INSIDE DROP MANHOLE	DRAWING NO.	SS-2
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					

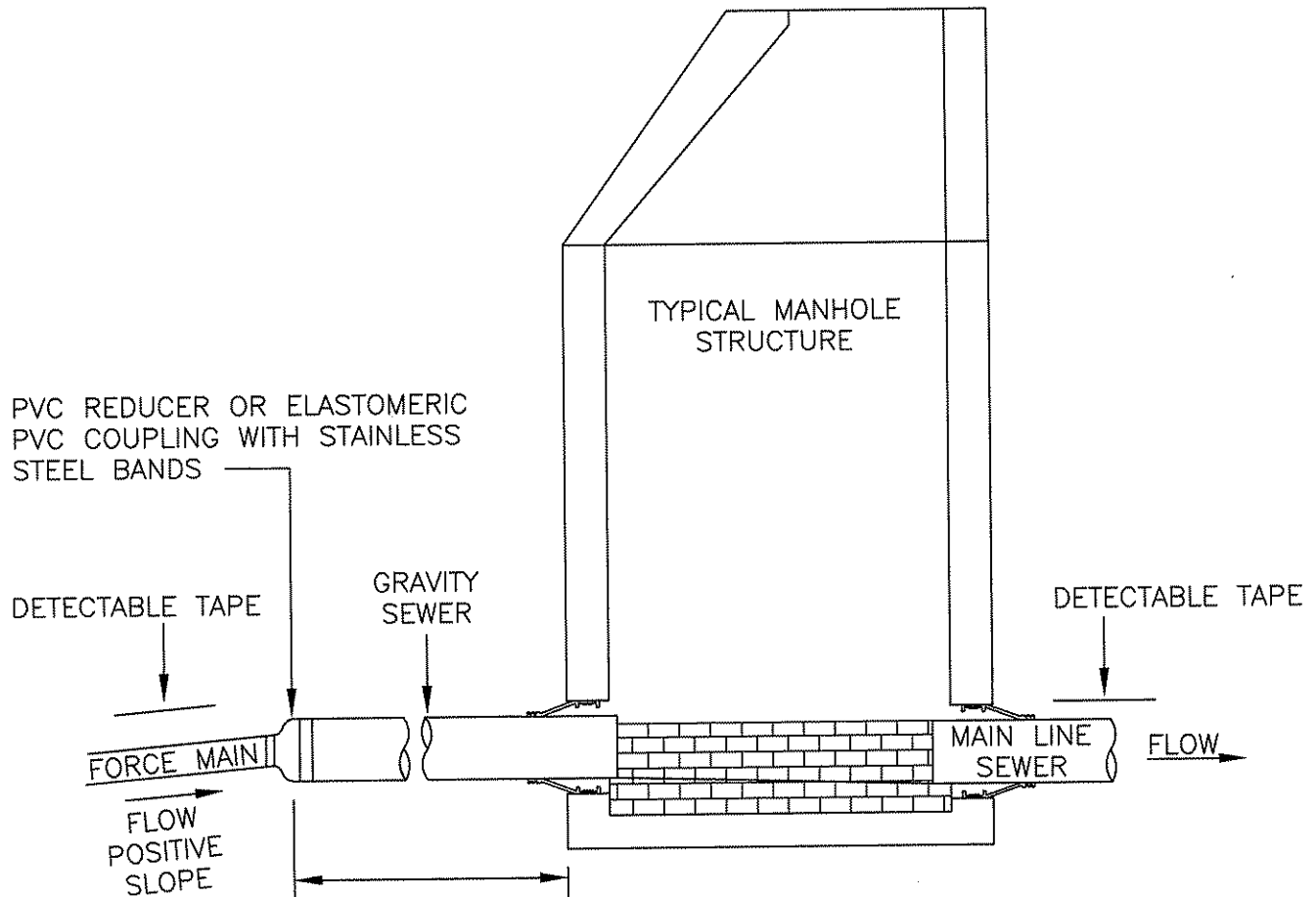




NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SEWER
-	-	-	<b>CLEANOUTS ON SERVICE LATERALS</b>	DRAWING NO.	SS-3
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



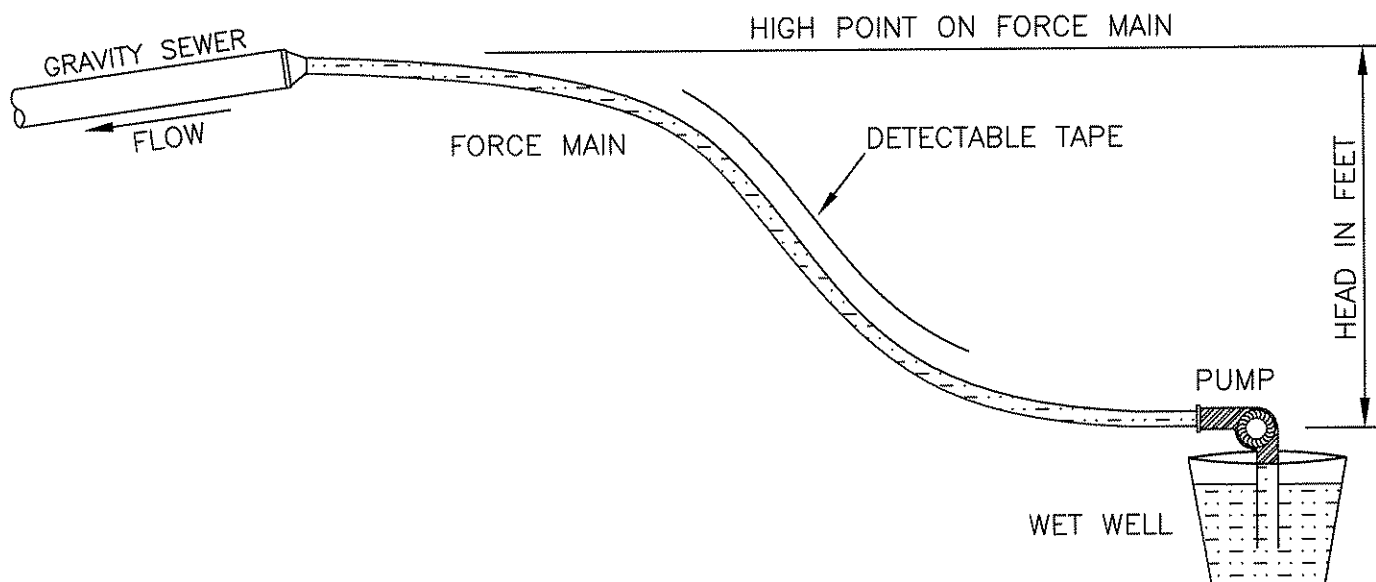
NO.	REVISION	DATE	City of Concord Engineering Services Division		SECTION:	SEWER
—	—	—	<b>CLEANOUT COVERS</b> <b>4" OR 6"</b>		DRAWING NO.	SS-4
—	—	—			DATE:	12/08
—	—	—			PAGE:	1
APPROVED BY:						



TRANSITION FROM FORCE MAIN TO GRAVITY SEWER SHOULD OCCUR A MINIMUM OF 10' FROM A MANHOLE FOR SEWER MAINS AND AT THE RIGHT-OF-WAY LINE FOR SEWER SERVICES

FOR BRICK SHELF CONSTRUCTION REFER TO SANITARY AND STORM DRAIN BRICK SHELF CONSTRUCTION DETAIL

City of Concord Engineering Services Division			SECTION: SEWER		
NO.	REVISION	DATE	FORCE MAIN CONNECTION	DRAWING NO. SS-5	
-	-	-		DATE: 12/08	PAGE: 1
-	-	-			
-	-	-			
APPROVED BY:					



#### PRESSURE TEST REQUIREMENTS

PRESSURE (PSI) = 100 PSI OR HIGHER AS CALCULATED BY: HEAD X 1.5  
 (SAFETY FACTOR) / 2.31 FEET PER #  
 THE STATIC PRESSURE MUST HOLD FOR ONE HOUR TO BE ACCEPTABLE.

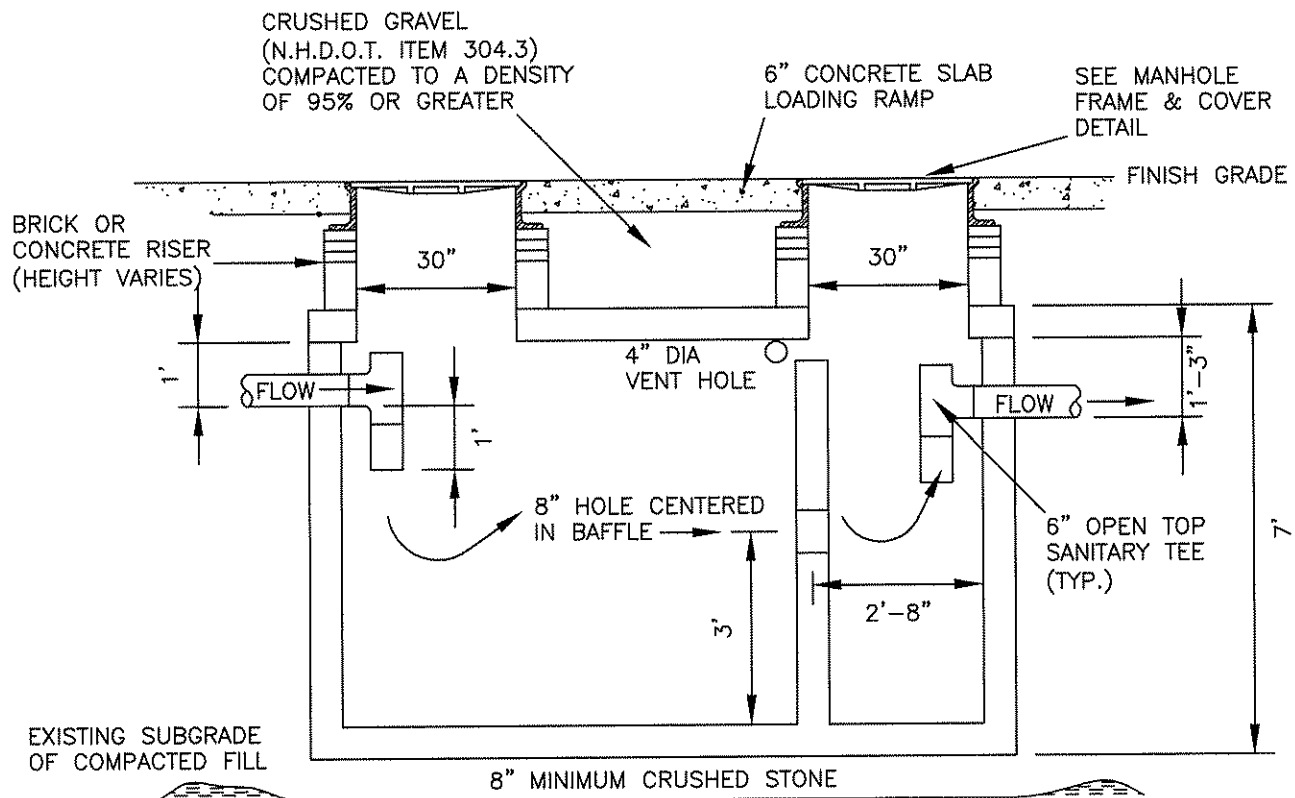
EXAMPLE:

HEAD = 80 FT

PRESSURE = 80 FT X 1.5 / 2.31 FT PER #  
 = 51.95 PSI (ROUND UP TO NEAREST 10#)  
 = 60 PSI

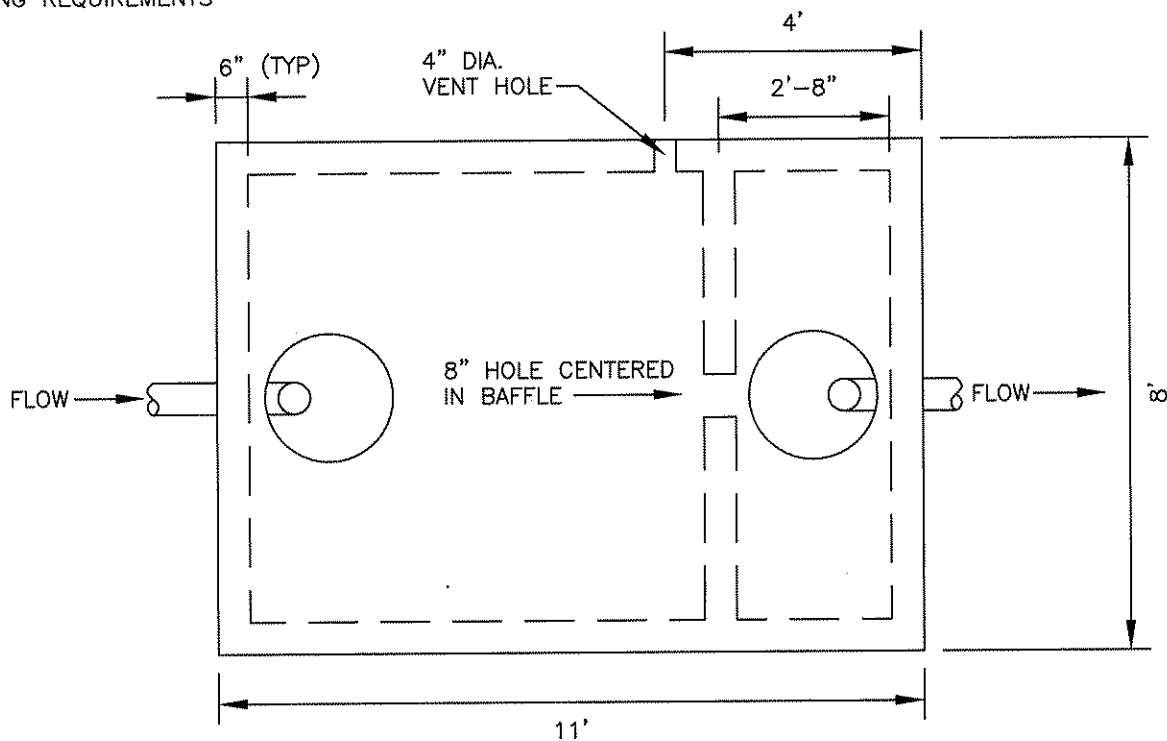
FORCE MAIN TEST PRESSURE TO BE 60 PSI

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SEWER
-	-	-	<b>FORCE MAIN TESTING REQUIREMENTS</b>	DRAWING NO.	SS-6
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



\* GREASE TRAP SHALL  
BE DESIGNED TO H-20  
LOADING REQUIREMENTS

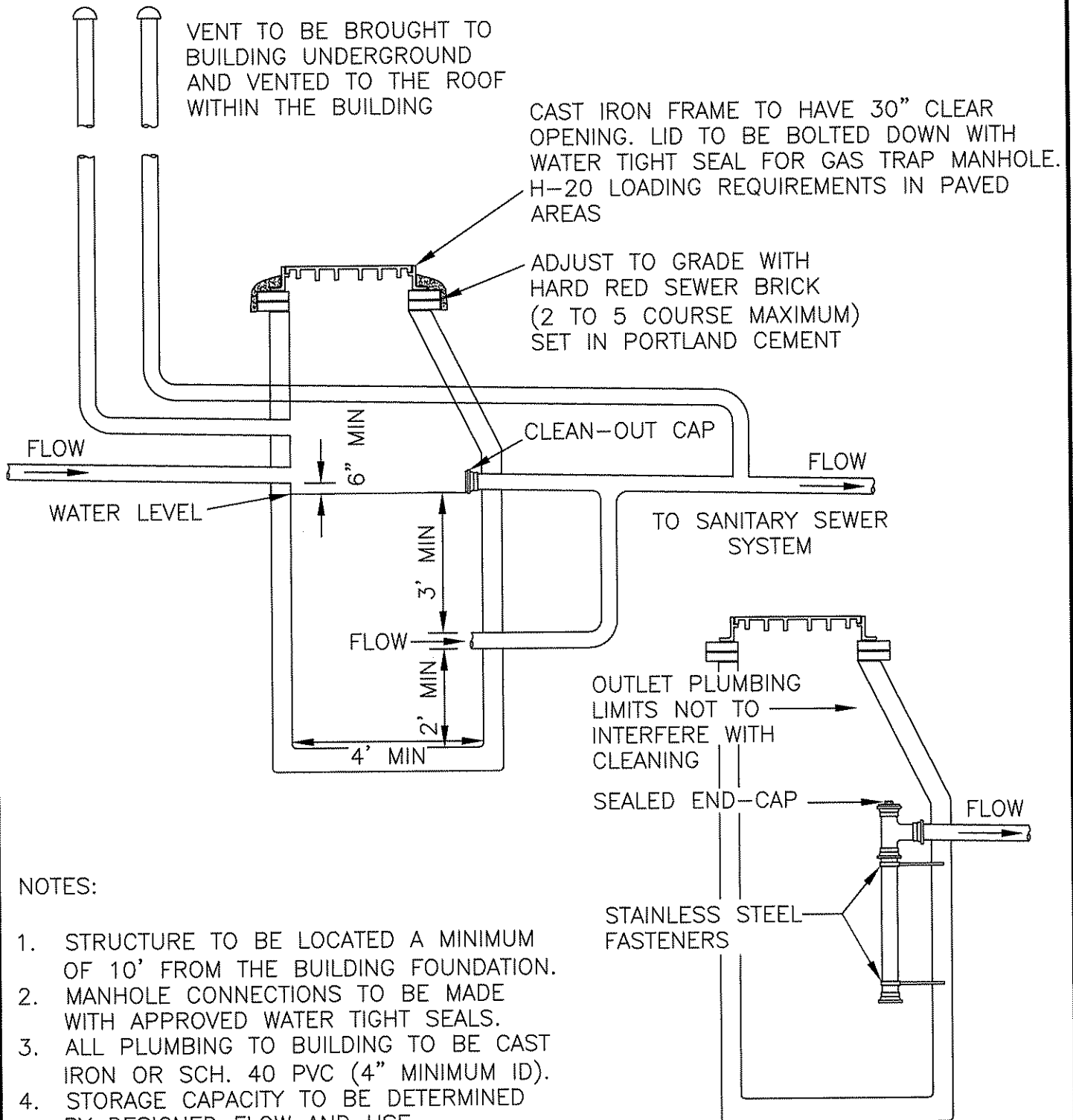
## SECTION



## PLAN

NO.	REVISION	DATE	City of Concord Engineering Services Division		SECTION:	SEWER
-	-	-	3000 GALLON GREASE TRAP		DRAWING NO.	SS-7
-	-	-			DATE:	12/08
-	-	-			PAGE:	1
APPROVED BY:						

OPTIONAL  
VENT SYSTEM

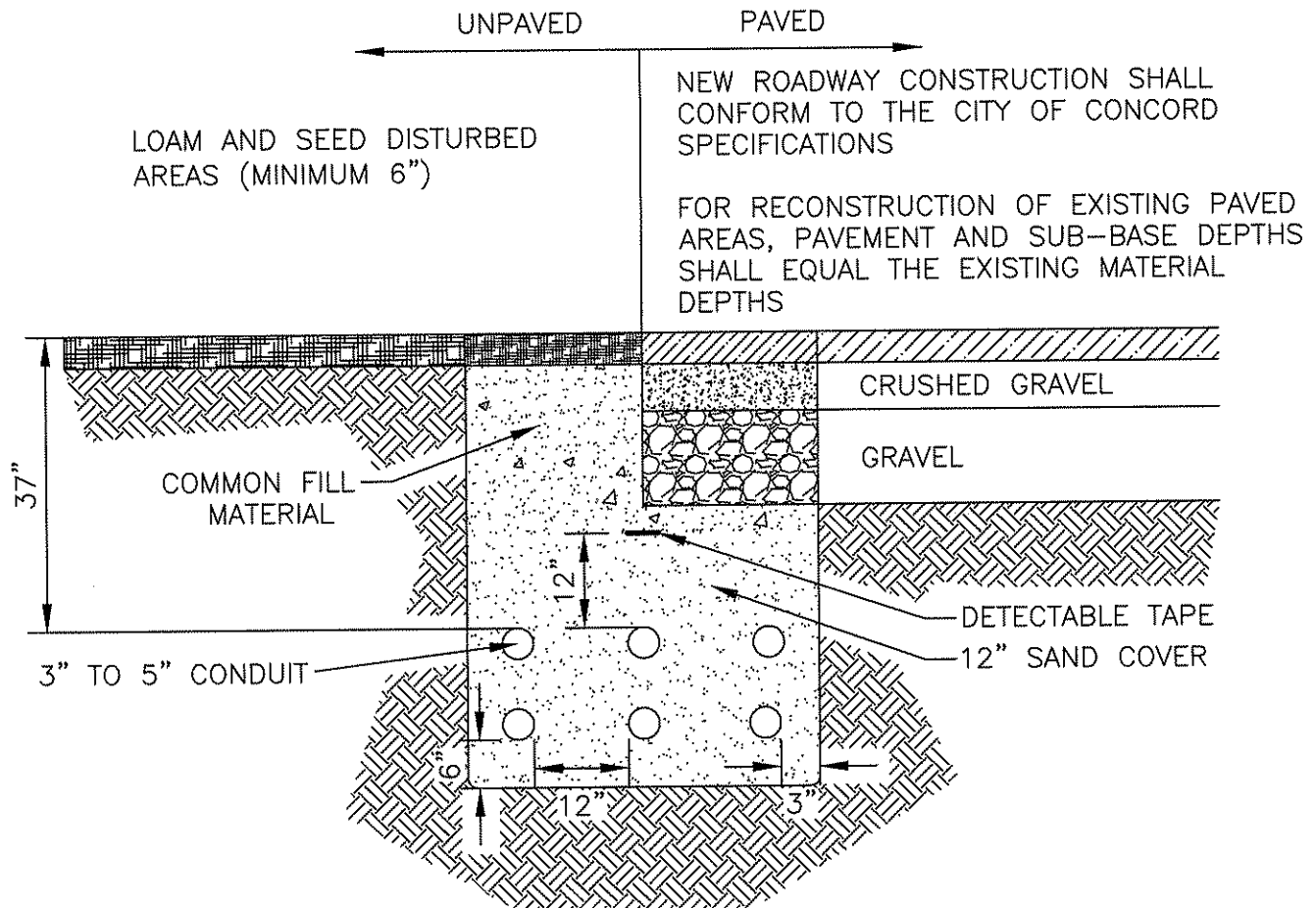


NOTES:

1. STRUCTURE TO BE LOCATED A MINIMUM OF 10' FROM THE BUILDING FOUNDATION.
2. MANHOLE CONNECTIONS TO BE MADE WITH APPROVED WATER TIGHT SEALS.
3. ALL PLUMBING TO BUILDING TO BE CAST IRON OR SCH. 40 PVC (4" MINIMUM ID).
4. STORAGE CAPACITY TO BE DETERMINED BY DESIGNED FLOW AND USE.

OPTIONAL INTERNAL PLUMBING  
(ALL DIMENSIONAL AND VENTING  
REQUIREMENTS APPLY)

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SEWER
-	-	-	OIL/WATER INTERCEPTOR STRUCTURE	DRAWING NO.	SS-8
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



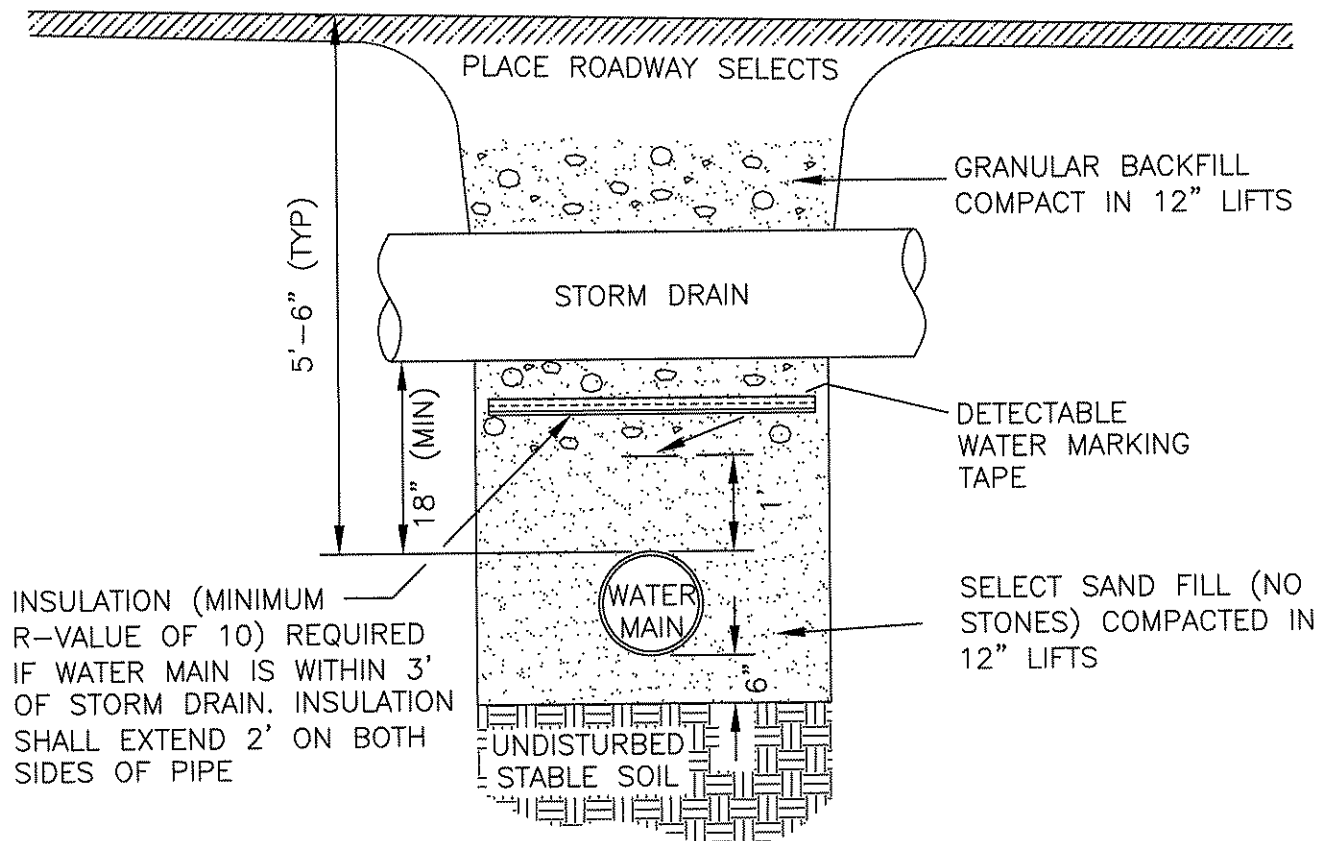
UNDERGROUND CONDUIT INSTALLATIONS SHALL BE COORDINATED WITH ALL LOCAL UTILITIES INCLUDING ELECTRIC, TELEPHONE, GAS, CABLE, STEAM, AND CITY OF CONCORD FIRE ALARM/SIGNAL AND ENGINEERING SERVICES DIVISIONS.

CONDUIT CROSSINGS SHALL BE SWEEPS AT RIGHT ANGLES TO THE STREET. 90° BENDS ARE NOT ACCEPTABLE

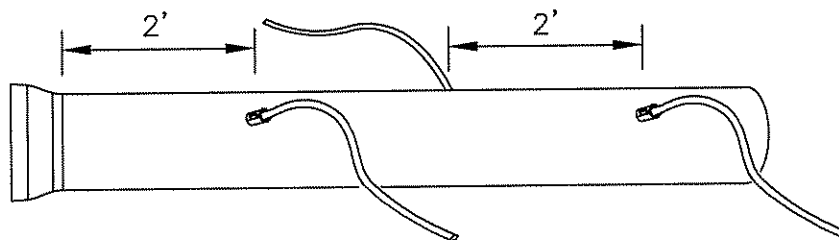
PROPOSED CONDUITS WITHIN PAVED SECTIONS OF STREETS SHALL BE RIGID METAL OR SCH 80 PVC CONDUIT. WHEN THE PROPER DEPTH CANNOT BE ACHIEVED, SCH 40 PVC CONDUIT ENCASED IN CONCRETE SHALL BE USED.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE/STREET
-	-	-	TYPICAL UTILITY CONDUIT INSTALLATION	DRAWING NO.	U-1
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					

PLACE ASPHALT BINDER ALONG  
WITH FINAL WEARING COURSE AS  
DIRECTED BY THE CITY ENGINEER



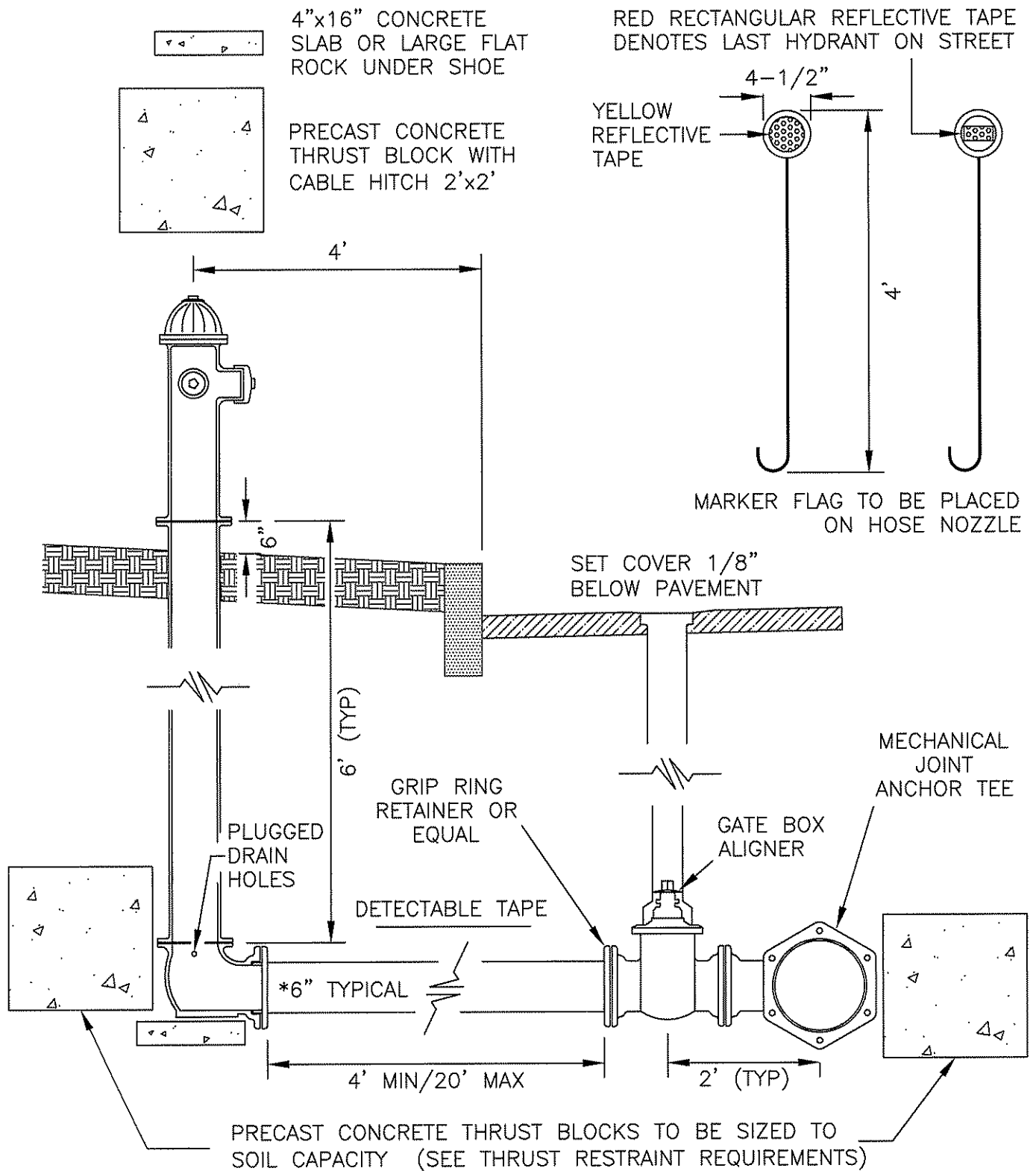
24" MINIMUM SEPARATION BETWEEN SERVICE  
TAPS OR FROM A BELL



NOTE: ALL SERVICES SHALL HAVE DETECTABLE TAPE PLACED 12"  
OVER THE TOP OF THE SERVICE

NO.	REVISION	DATE	City of Concord Engineering Services Division		SECTION:	WATER
-	-	-	<b>WATER SERVICE AND MAIN INSTALLATION</b>		DRAWING NO.	W-1
-	-	-			DATE:	12/08
-	-	-			PAGE:	1
APPROVED BY:						



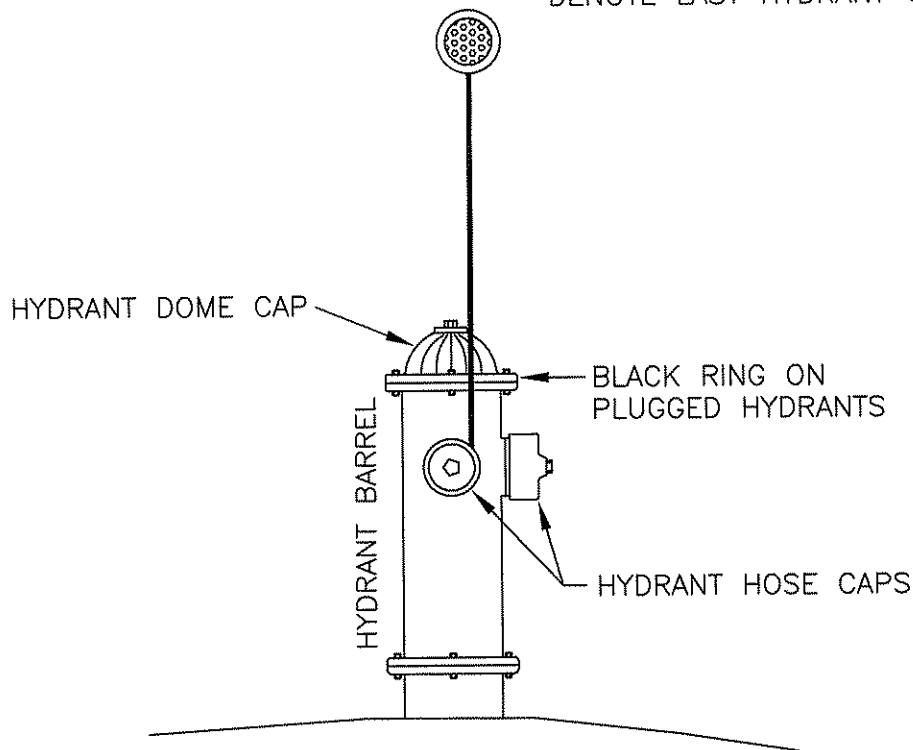


\* NOTE: 8" DIAMETER PIPE REQUIRED SHOULD HYDRANT BE MORE THAN 20 FT FROM WATER MAIN.

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	WATER
-	-	-	<b>FIRE HYDRANT</b>	DRAWING NO.	W-2
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					

## HYDRANT MARKER FLAG COLORS

YELLOW REFLECTIVE TAPE  
RED RECTANGULAR REFLECTIVE TAPE TO  
DENOTE LAST HYDRANT ON STREET



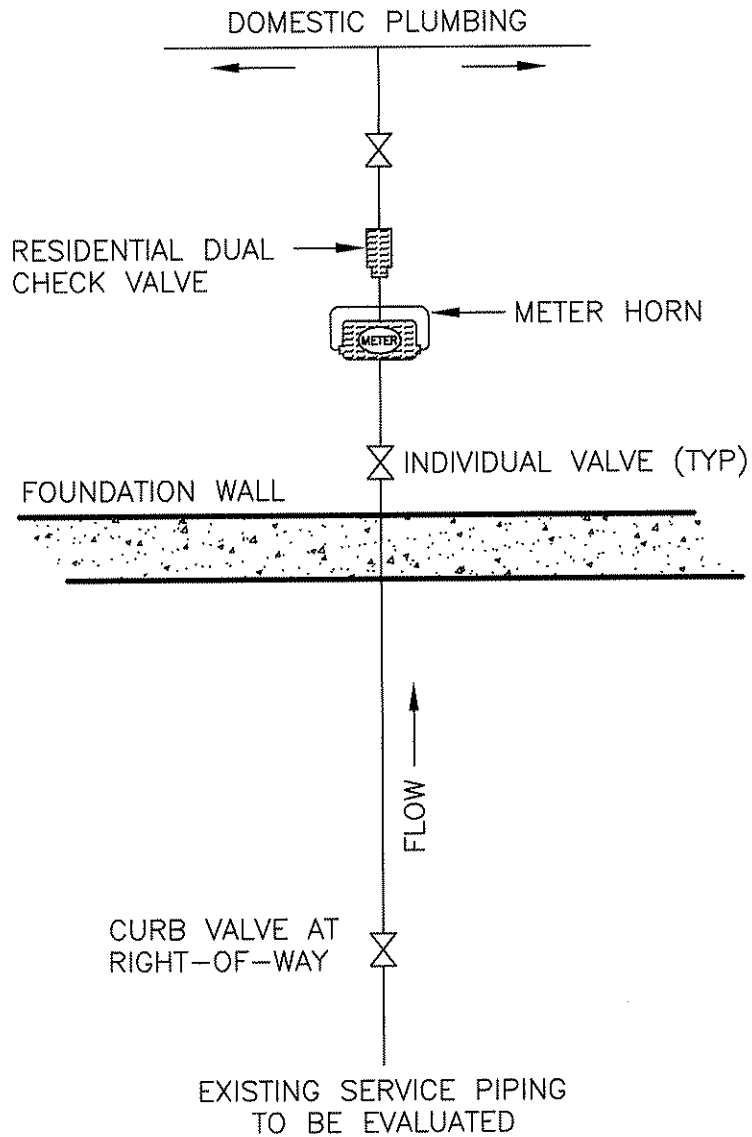
## HYDRANT PAINTING

SERVICE PRESSURE	HYDRANT BARREL	HYDRANT DOME CAP	HYDRANT HOSE CAPS
HIGH PRESSURE:			
PUBLIC	OSHA ORANGE	CHROME ALUMINUM	OSHA ORANGE
PRIVATE	GLOSS YELLOW	CHROME ALUMINUM	GLOSS YELLOW
EXTRA HIGH PRESSURE:			
PUBLIC	OSHA ORANGE	CHROME ALUMINUM	CHROME ALUMINUM
PRIVATE	GLOSS YELLOW	CHROME ALUMINUM	CHROME ALUMINUM
NON-POTABLE WATER SUPPLIES:			
PUBLIC	OSHA ORANGE	GLOSS GREEN	OSHA ORANGE
PRIVATE	GLOSS YELLOW	GLOSS YELLOW	GLOSS GREEN

### NOTES:

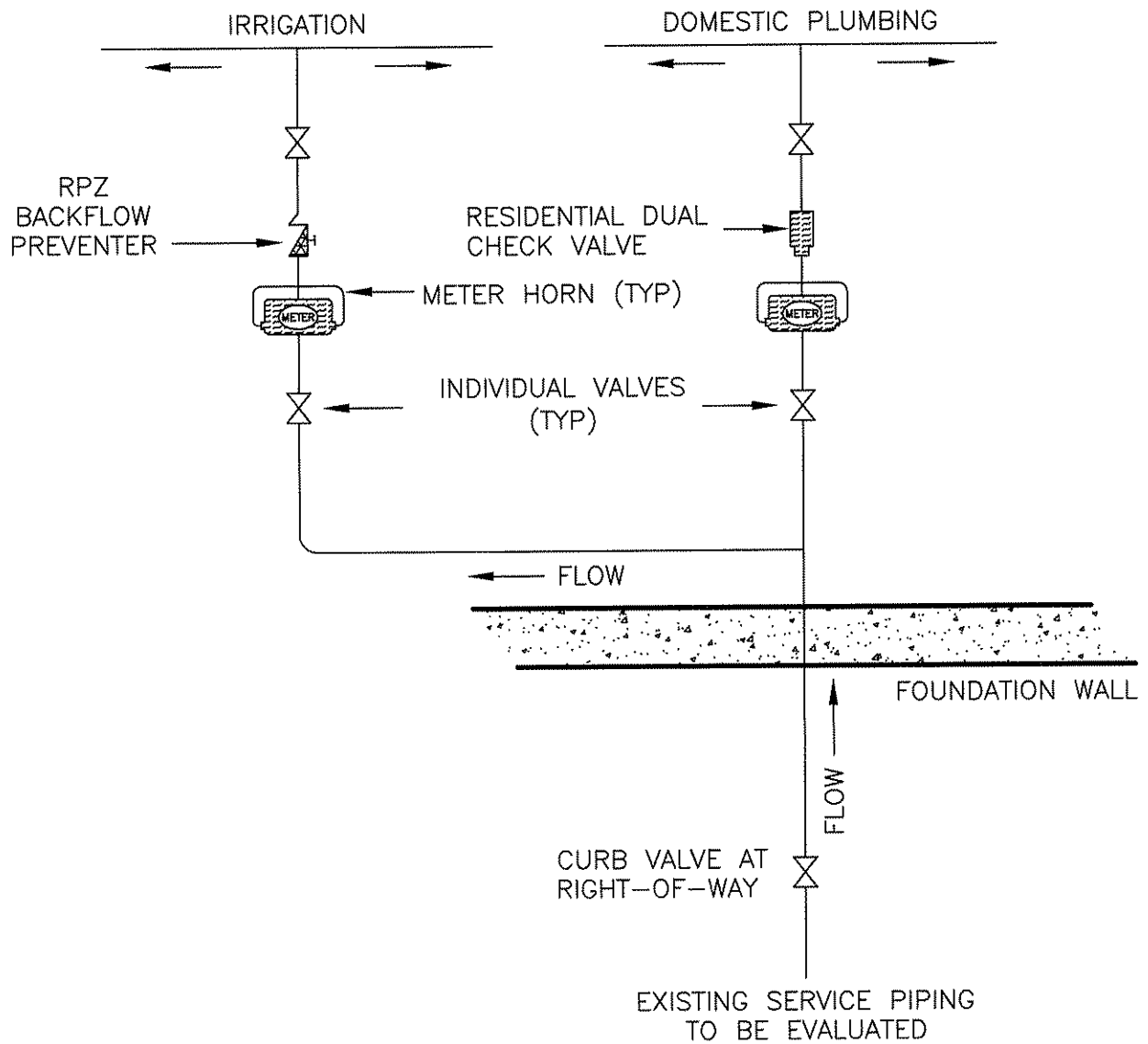
1. THE CONTRACTOR/DEVELOPER SHALL BE RESPONSIBLE FOR THE PAINTING OF THE HYDRANTS.
2. AT THE CONTRACTORS OPTION, IF REQUESTED, GENERAL SERVICES WILL PAINT THE HYDRANTS AT A NOMINAL CHARGE

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	WATER
-	-	-	<b>HYDRANT PAINTING &amp; MARKER FLAGS</b>	DRAWING NO.	W-3
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



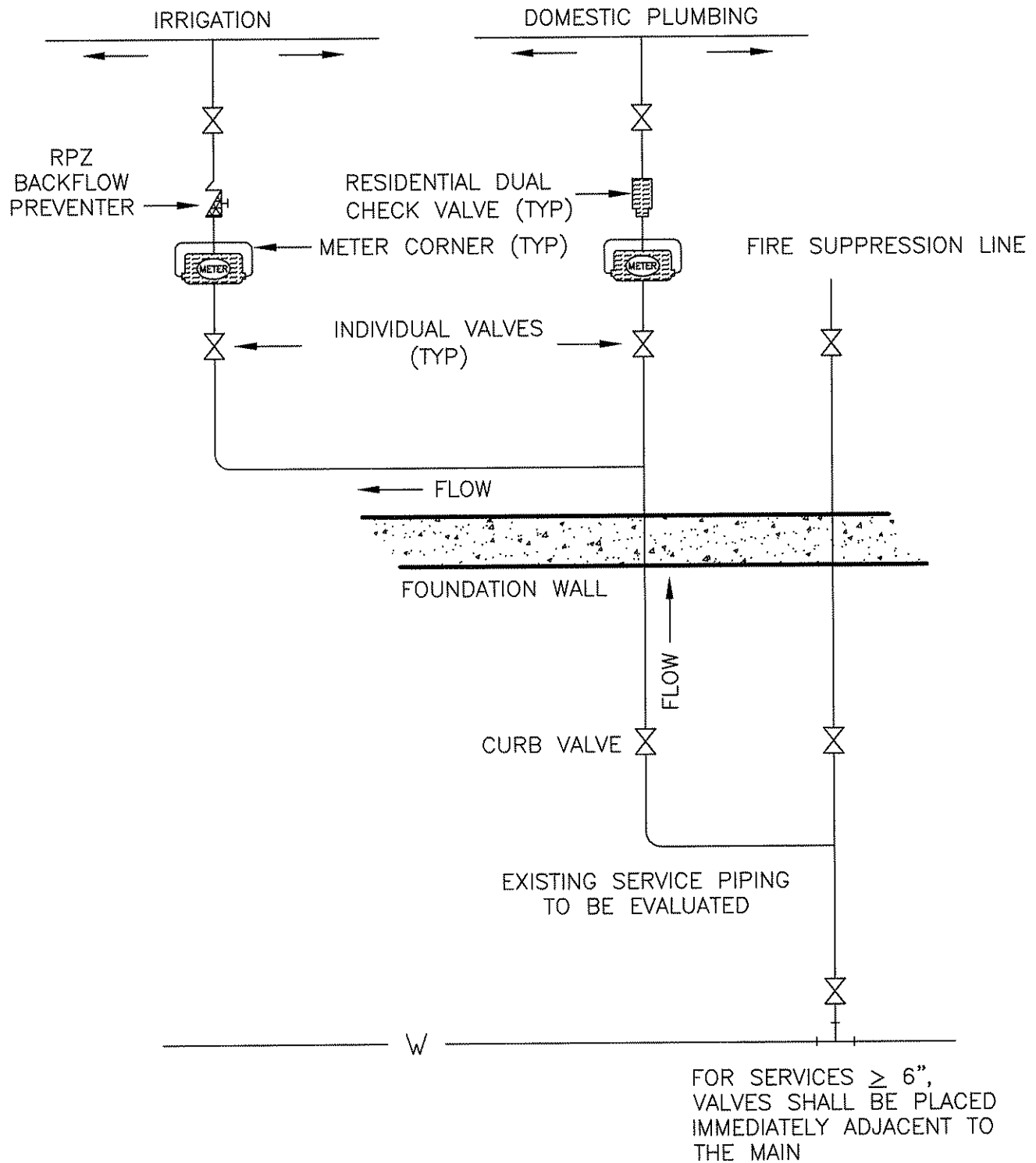
NOTE: ALL METERS SUPPLIED BY CITY OF  
CONCORD GENERAL SERVICES DEPARTMENT

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	WATER
-	-	-	<b>SINGLE FAMILY METER INSTALLATION</b>	DRAWING NO.	W-4
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



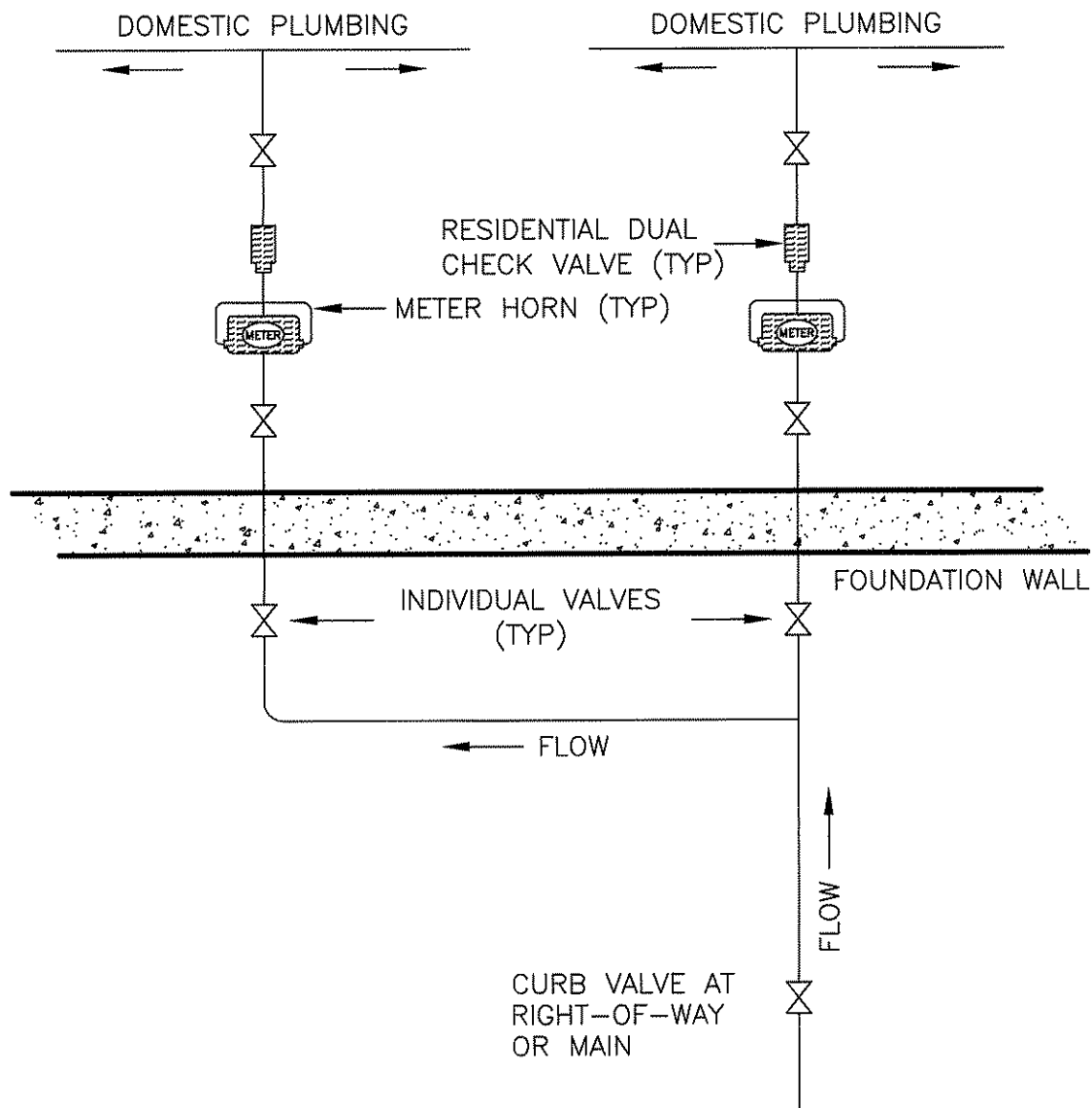
NOTE: ALL METERS SUPPLIED BY CITY OF  
CONCORD GENERAL SERVICES DEPARTMENT

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	WATER
-	-	-	RESIDENTIAL METER INSTALLATION WITH IRRIGATION	DRAWING NO.	W-5
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



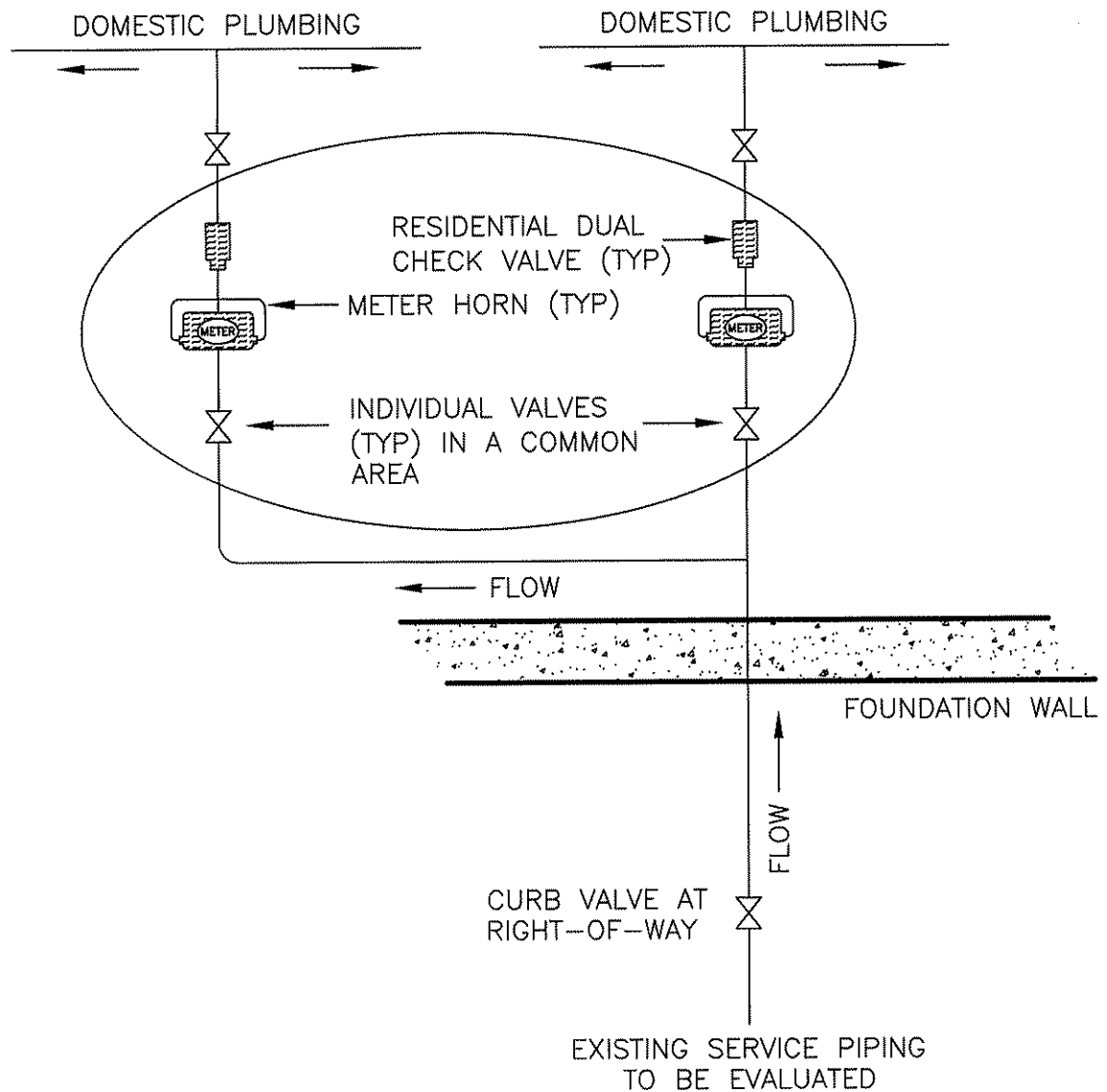
NOTE: ALL METERS SUPPLIED BY CITY OF CONCORD GENERAL SERVICES DEPARTMENT

NO.	REVISION	DATE	City of Concord Engineering Services Division		SECTION:	WATER
-	-	-	<b>METER INSTALLATION WITH IRRIGATION AND FIRE SUPPRESSION</b>		DRAWING NO.	W-6
-	-	-			DATE:	12/08
-	-	-			PAGE:	1
APPROVED BY:						



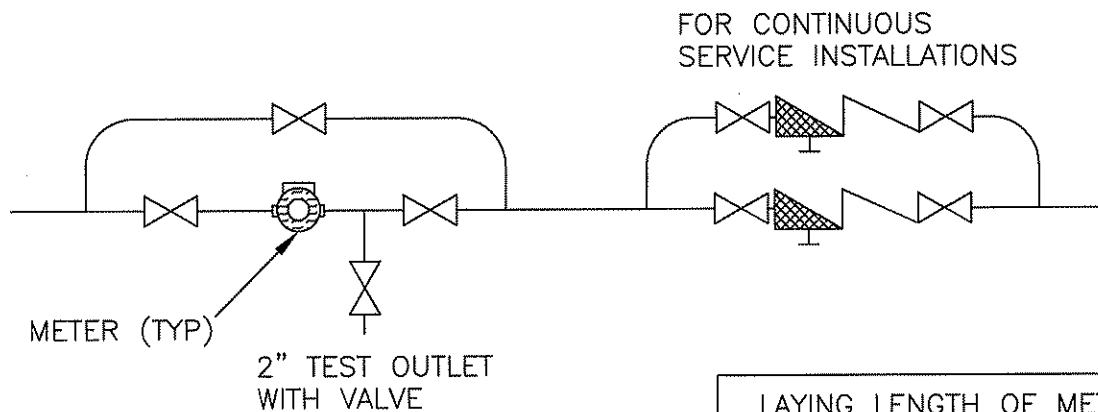
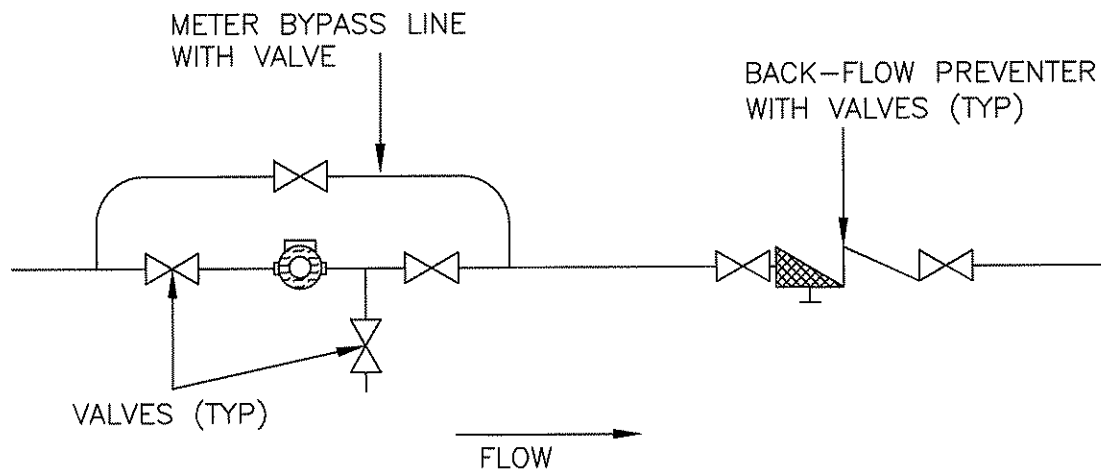
NOTE: ALL METERS SUPPLIED BY CITY OF CONCORD GENERAL SERVICES DEPARTMENT

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	WATER
-	-	-	<b>NEW CONDOMINIUM DUAL RESIDENTIAL METER INSTALLATION</b>	DRAWING NO.	W-7
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



NOTE: ALL METERS SUPPLIED BY CITY OF  
CONCORD GENERAL SERVICES DEPARTMENT

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	WATER
-	-	-	<b>CONDO CONVERSION DUAL RESIDENTIAL METER INSTALLATION</b>	DRAWING NO.	W-8
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



LAYING LENGTH OF METERS:

$\frac{5}{8}$ " x $\frac{3}{4}$ "	=	7 $\frac{1}{2}$ "
1" x _____	=	10 $\frac{3}{4}$ "
1 $\frac{1}{2}$ " x _____	=	13"
2" x _____	=	17"
3" TURBO x _____	=	16"
TURBO x _____	=	14"

ON ALL WATER SERVICES WITH A METER SIZE OF 1 $\frac{1}{2}$ " OR LARGER, A BYPASS LINE WITH A 2" TEST OUTLET IS REQUIRED.

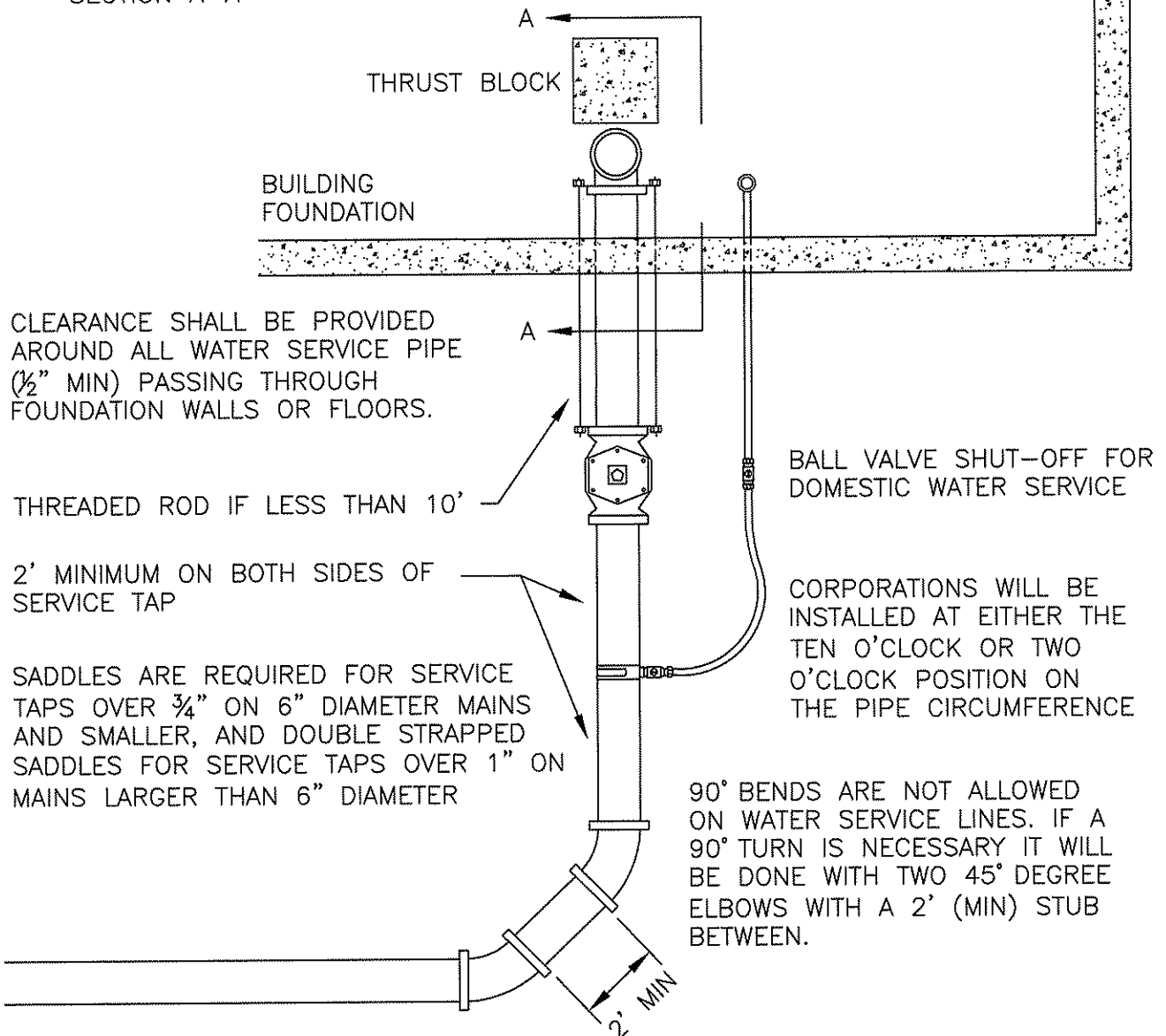
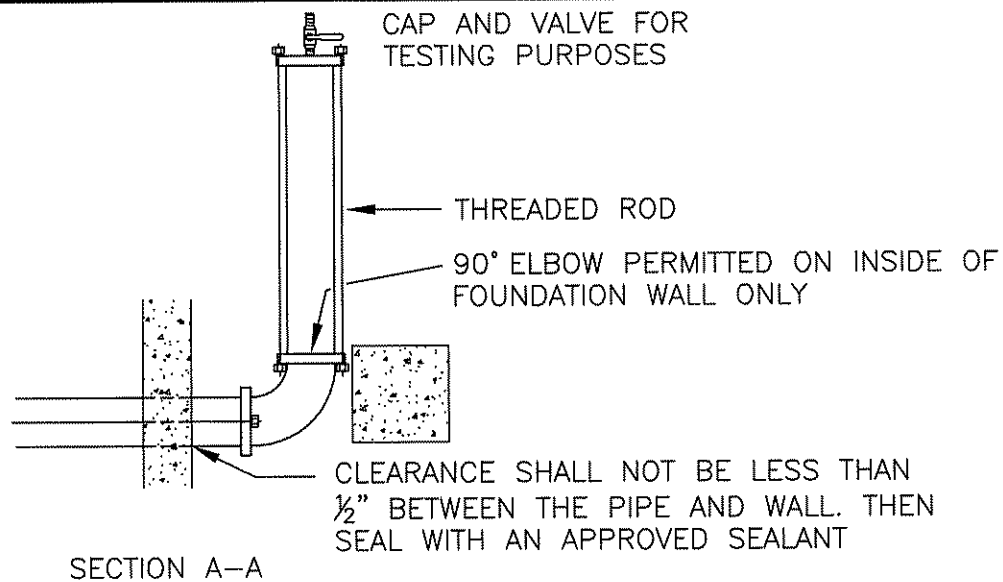
AN IDLER OR METER SPACER WITH GASKETS AND BOLTS CAN BE OBTAINED FROM THE CITY UTILITY BILLING OFFICE TO ASSIST WITH METER PLUMBING.

NO OBSTRUCTIONS ARE ALLOWED:

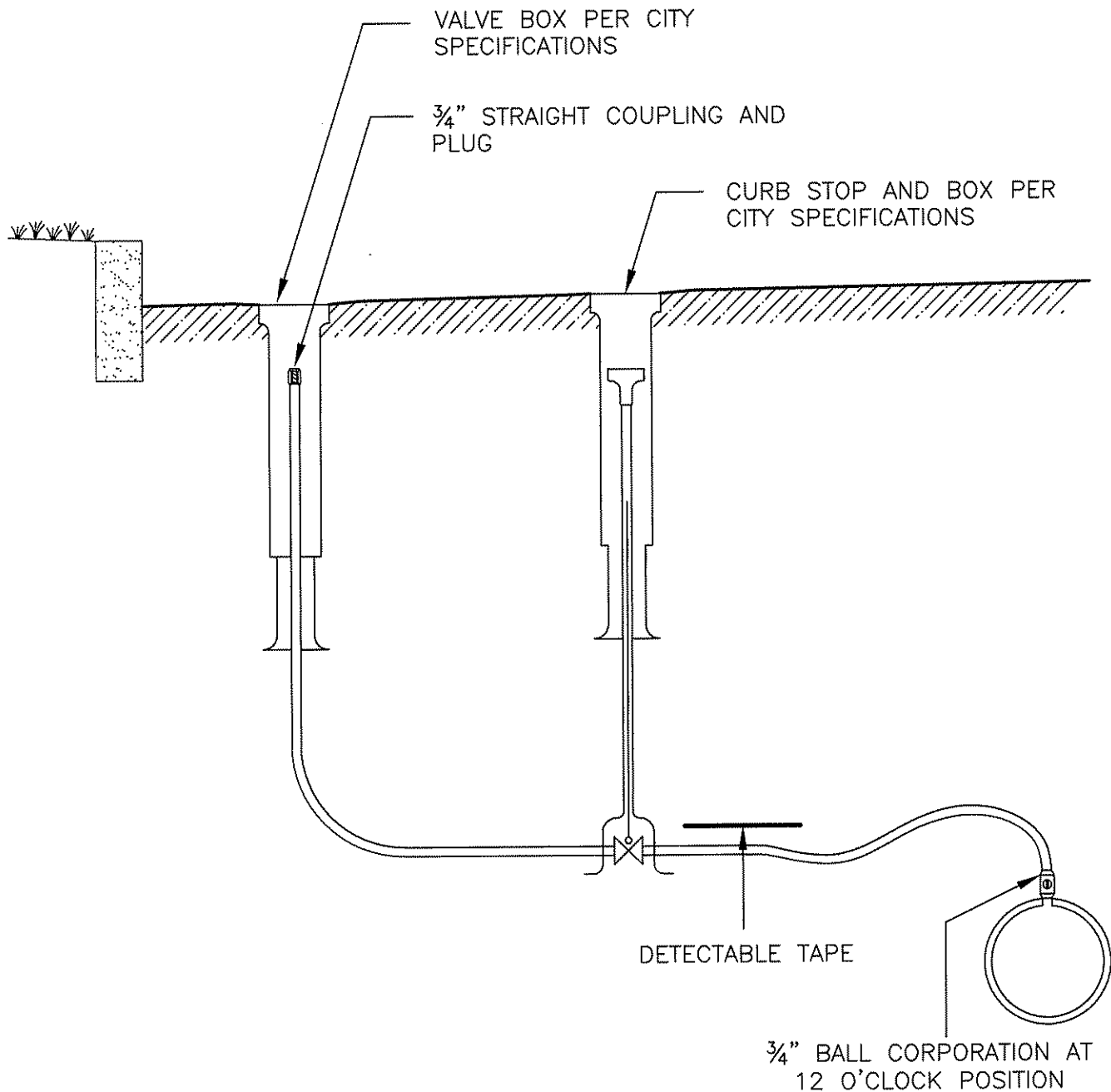
BEFORE THE METER	5 x D
BEFORE A METER WITH STRAINER	3 x D
AFTER THE METER	2 x D
WHERE D = PIPE DIAMTER	

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	WATER
-	-	-	INSTALLATION OF WATER METERS	DRAWING NO.	W-9
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					





NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	WATER
-	-	-	<b>WATER SERVICE THROUGH FOUNDATION</b>	DRAWING NO.	W-10
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					



NOTE: ALL HARDWARE SHALL BE REMOVED AND A BRASS PLUG INSERTED INTO PIPE

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	WATER
-	-	-	<b>AIR RELEASE VALVE</b> <b>(FOR TESTING PURPOSES ONLY)</b>	DRAWING NO.	W-11
-	-	-		DATE:	12/08
-	-	-		PAGE:	1
APPROVED BY:					